THE LANCET.

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COURSE OF LECTURES
ON THE
DISEASES OF THE EYE,
Delivered in 1840,
AT THE
ROYAL SCHOOL OF ANATOMY AND MEDICINE,
MANCHESTER,
By JOHN WALKER, Esq., Surgeon.
(Second Division.)

LECTURE XII.
Strabismus.

THE next subject to which I would invite your attention, is that irregular action of the muscles of the eye which is named *strabismus* or squint.

This is a highly curious and interesting subject, and one to which the genius of Dieffenbach has recently given a degree of practical importance which it never before possessed.

The uniformity in the direction of the two eyes, in a state of health, is a very remarkable circumstance. It is not the result of education, nor the force of habit, nor does it depend upon the will. So regular and constant is it, that it can only be regarded as a law of the animal economy, for we observe it in the newly-born infant, continuing through life, and only ceasing from some morbid condition affecting either the nervous or muscular system of the eye. Many as are the interesting topics connected with the physiology of vision, there are few which are more curious than this invariable consent in the direction of the two eyes. Let one be turned in whatever direction we may choose, and the other instinctively follows, or rather accompanies it. Indeed, the will is totally unable to prevent it. We cannot, for instance, elevate one eye without the other being at the same time elevated; neither can we depress either separately. We cannot look at an object which requires one eye to be turned inwards, such as a body placed contiguous to the nose, but the other turns in the same direction. If we look straight forwards, one is directed parallel to the other. And, what is most curious and apparently contradictory is the fact, that when one eye is directed outwards, the other is always directed inwards. No exertion that we can make use of, no effort of the will, can enable us to direct both eyes outwards at the same time. In this arrangement we witness a most curious provision of nature, and one which is not superfluous but essential to the perfection of vision, because but for it, when one eye is turned outwards to behold an object situated laterally, the other would be turned contrariwise, and then we should have one of these organs directed towards the object and the other from it. In short, it is clear that every arrangement as regards the motions of the eyes is designed to effect a uniformity in their direction, so that both may always be turned towards the same objects.

If this uniformity in the direction of the two eyes be lost or impaired from any cause,—if the direction of one ceases to correspond with that of the other, then there is that peculiar appearance which is known by the term strabismus or squint. What the precise pathological condition of the nerves or muscles of the eye may be in this affection is, perhaps, not established. Generally, the squinting eye is not paralytic, because if one organ be covered up, then the other will be found to have its motions perfect in every direction. For the same reason, it is evident that no shortening or contraction of the muscle which draws the eye in this irregular manner can exist. So that it is plain the independent movements of an eye thus affected are perfect, that it is the associated action that is defective, and that the organ is only inactive when it ought to move conjointly with its fellow.

When we reflect on the complicated arrangement of the muscular apparatus, and the intricacy of the nerves which regulate the movements of the eyes, that no less than six pairs of muscles and three pairs of nerves have either to be brought into action, or become relaxed before the slightest alteration in their direction can be properly effected, we shall cease to wonder that those actions should occasionally be disturbed and irregu-

lar, and lose that perfect uniformity which they usually present.

In most cases of strabismus, then, we shall find that it is merely this absence of agreement in the direction of the two eyes which constitutes the defect in question. In some instances, one eye only appears to be affected, and it is commonly directed inwards; whilst in others both are so directed, and this variety of the affection is termed strabismus *convergens*, in contradistinction to an opposite condition, less frequently witnessed, in which the eye is directed outwards, and therefore called strabismus *divergens*. In some very rare instances, the unnatural direction of the eye is upwards, when it is termed strabismus *sursumvergens*; or it may be downwards, when it is named strabismus *deorsumvergens*.

Ordinary strabismus comes on early in life, during infancy or childhood, and in most cases vision is not materially impaired. In some instances, and more particularly in adults, strabismus is an accompaniment of amaurosis, although the latter is frequently witnessed without the former. I apprehend that when the two are combined, it will generally happen that the cause of the mischief is in the brain, affecting the optic and motor nerves either in their origin or course; and that when amaurosis is the result of disease of the retina, or of the optic nerve alone, then strabismus will be less likely to exist. At all events, we know that strabismus is a frequent result of affections of the brain.

In those cases of strabismus which accompany paralysis, the patient at first sees double, and no doubt such will be the case generally. This, however, is but a temporary defect, the double vision ceasing after a time, notwithstanding the continuance of the squint. Opportunities of verifying this remark frequently occur. This fact was noticed by Cheselden, who relates the case of a person who had one of his eyes distorted by a blow: for some time every object appeared double, but by degrees the most familiar ones became single, and in time all objects became so, though the distortion continued. Dr. Hawkins has likewise related an interesting case in which, among other paralytic symptoms, strabismus was present. The double vision after a time disappeared, although the distortion remained; the sight of this eye was then lost: it seemed not unlikely (says Dr. H.) that double vision would again be produced when the healthy action of this eye should be about to be restored. This we afterwards found to be the case. (Medical and Physical Journal, vol. i., p. 221.) The same result we now know to be a constant occurrence after strabismus has been removed by operation.

Many causes are assigned for the production of strabismus. By some it is thought to be congenital and even hereditary. Imitation, the habit of looking at the point of the nose, the position in which children are made to lie, and other similar causes, are sometimes referred to as the origin of strabismus. It is very doubtful if such trivial causes as these are alone capable of producing the deformity. Inflammation of the eye, ulcers and specks of the cornea, and congenital cataract, are also considered to be efficient causes; in the latter cases, the eye seems to be habitually directed so as to permit the rays of light to penetrate any portion of the cornea or crystalline that may retain a degree of transparency. A defective sensibility of the retina is also regarded by some as a very frequent cause of strabismus. The sight of one eye being impaired, it is thought that the impressions on the retina are disregarded, and the weakened eye, therefore, ceases to be directed towards objects which the sound organ is in search of. That this last condition does not necessarily produce strabismus may, however, be inferred from the fact, that in numerous cases of weakness of sight, or even of amaurosis of one eye, the irregularity in question does not exist. On the other hand, an eye affected with strabismus may have its power of vision diminished by being habitually unemployed.

Various morbid states of the brain indisputably tend to the production of strabismus; such are hydrocephalus, convulsions, apoplexy, and the like. Strabismus, indeed, is often one of the earliest indications of some disordered action of the brain; and I have witnessed many cases of young children in whom for a long time this was the only evidence of such disordered action, but which, nevertheless, after a certain period, terminated in hydrocephalus. On this and other accounts, I am led to suspect that the brain is, more or less, affected in most cases of strabismus arising in infancy or childhood. Sometimes, doubtless, irritation in more remote organs, operating through the medium of the nervous system, may induce this affection, such as teething, worms, derangement of the digestive functions and the like. Blows about the orbital region and injury of the frontal nerve, are also thought sometimes to produce the affection. Mental emotions, such as fright, have likewise been considered as an occasional cause of strabismus.

The treatment of strabismus must be regulated by its presumed origin. If the affection be recent, and apparently connected with some morbid condition of the brain, our remedies must of course be directed to this organ. As I have just remarked, it frequently happens that strabismus is one of the earliest symptoms of that affection of the brain which so frequently terminates in hydrocephalus; and it is probably not too much to say, that in every case of strabismus, arising from an internal source, the brain is either primarily or indirectly affected. It is true that, in many cases, there may not be any extensive or even appreciable lesion, but still to a sufficient extent to lead to an aberration of the func-

tions of that portion of the brain upon which the integrity of the motor powers of the eye depends. In such cases then, where there is reason to believe that the central organ of the nervous system is the source of the affection, our treatment must be directed accordingly; and no doubt blood-letting, mercurials, purgatives, and counter-irritants, are the remedies to be adopted. If there should seem reason to believe that the brain is but sympathetically affected, and that the disorder originates in the intestinal canal, from worms or other irritating matters, then purgatives and such remedies as may be expected to improve the secretions will offer the best chances of success.

But little benefit is to be expected from the use of goggles, and similar contrivances, worn before the eyes. Bandaging up the sound eye, and causing the patient to exercise the defective one alone, for a couple of hours a-day, is said to be in some cases productive of benefit. Generally speaking, however, there is but little reliance to be placed on this class of remedies; they are, indeed, only resorted to in cases which are supposed to be confirmed, and have defied the employment of medical treatment.

But the grand remedy for the cure of confirmed strabismus is yet to be considered. This is the operation, first practised by Dieffenbach, of dividing one or other of the muscles of the eyeball. This operation, which has only been introduced within the last few months, has now been performed on an immense number of individuals in all parts of the civilised world, and, so far as we can at present judge, with very considerable success.

As by far the larger proportion of cases of strabismus are those in which the eye is directed inwards, the operation to be performed will usually be that of division of the internal rectus muscle, or of its tendon. This operation is one of no great difficulty, and only requires a little practice and a certain amount of tact to insure its rapid and efficient performance. It is not, however, to be resorted to without some degree of caution, since numerous accidents have occurred, either from rashness or awkwardness. Although the operation is generally very successful, yet I should say that it is much easier to divide the internal rectus muscle than to cure strabismus. In some cases the operation certainly fails; but it is no valid objection to its general performance, that it is not always successful. I do not know, indeed, whether sufficient time has as yet passed away since the introduction of the operation into practice, to enable us to decide as to the permanency of the improvement which is unquestionably effected in most cases. It is now about twelve months since I first performed the operation, and all that I can say is, that up to this time all those cases in which the distortion of the eye was removed after its performance, the improvement, as far as I have been able to ascertain, still continues; so that I think we may reasonably conclude that the improvement will be lasting.

The method which I have adopted in performing the operation in my more recent cases has been the following. When one eye only is affected, the sound organ is covered with a bandage, passed around the head. An assistant secures the upper lid of the affected eye, whilst the lower is depressed by means of the spring speculum. The patient being directed to turn the eye outwards as far as possible, I seize hold of the conjunctiva with a pair of iris-forceps, and with Maunoir's scissors make a small incision from below upwards, just over the tendinous portion of the internal rectus: the tendon being thus exposed, I next pass one blade of the scissors under its entire breadth, and then bring the blades together, so as to separate it from its connection with the globe, when the operation is completed. If the other eye be also affected, the proceedings will then require to be reversed; the bandage must be applied over the eye first operated upon, and the same incision through the conjunctiva and tendon of the internal rectus of the other eye is then to be effected.

The operation of dividing the internal rectus muscle is, as I have said, usually sufficient to prevent the eye from being again drawn into the inner canthus, and the patient is consequently relieved from the defect under which he previously laboured. But it is an ascertained fact, that the separation of the tendon of this muscle from its connection with the globe, is not always sufficient to remedy the evil, although it may diminish it to some extent. In this event, it is presumed that unnatural adhesions have formed between the cellular membrane of the orbit and the globe itself; and hence a free incision through the cellular tissue is recommended to be practised, with a view of liberating the globe, which is described as being bound down by these adhesions. I confess that I entertain some doubts as to the correctness of this supposition. First, because if adhesions exist to such extent as to bind down the eye in this unnatural manner, I conceive that it would be impossible for the eye to be drawn in the opposite direction by the external rectus, which may generally be done; and secondly, because in cases where simple division of the internal rectus muscle has failed to remedy the defect, I have not found that incising the cellular membrane of the orbit has produced any improvement. If adhesions have really taken place, the eye must then be incapable of motion outwards, and a free incision in such circumstances might perhaps be beneficial.

When an operation on one eye has been unsuccessful, we are recommended by Mr. Elliott, of Carlisle, to proceed at once to the operation on the other, whether the latter ex-

hibit an appearance of squint or not. The reasons assigned by this gentleman appear to be very plausible, and his practice successful. It is sometimes, however, not easy to say beforehand, whether one or both eyes are affected in this manner. The best way to judge of this is to close the apparently-sound eye, and leave the patient to observe with the distorted one, which is then, of course, quite straight: if the first be now partially exposed, it will be seen that instead of being directed straight forwards, it will, if affected with strabismus, be turned towards the inner canthus. This rule, however, is not infallible, for I have found that when this has been the case, and I have pronounced both eyes to be affected, an operation on one has been sufficient to remove the defect. On the other hand, as in Mr. Elliott's cases, when there is every appearance of the disease being confined to one eye, it is sometimes found necessary to resort to the operation on both.

When successful in removing the squint, the division of the internal rectus muscle does not prevent all motion of the eye inwards,—it only diminishes that inordinate action which causes it to be impelled in that direction when removed from the immediate control of the will. Hence we presume that some other power enables the organ to move in that direction after the division of the internal rectus. That power must be supposed to be in the superior oblique muscle; and we find that Dieffenbach, and some others, after ineffectually cutting across the internal rectus, have removed the distortion of the eye by the division of the trochlearis.

With respect to external squint, or divergent strabismus, this is much less frequently met with than the convergent variety. In the normal state, the power which tends to draw the eye inwards is greater than that in the opposite direction. Not only the internal rectus, but most probably both the oblique muscles, tend to bring the eye towards the inner canthus; and it is likely that the greater frequency of internal strabismus is owing to this preponderating power in that direction. The operation of dividing the external rectus is almost precisely similar to that of the internal, the only difference being that the incisions are made from the external instead of the internal canthus.

After the division of the internal rectus muscle, it occasionally happens that the eye becomes directed outwards, and the case is converted from convergent to one of divergent strabismus. In this event it becomes necessary to perform the same operation on the external rectus; and this is frequently successful in restoring the uniformity in the direction of the two eyes.

The treatment after the operation of dividing the muscles of the globe, is best conducted on the principles I have before explained, in speaking of wounds, and the various operations on the eye. All that is commonly needed is to keep the organ at rest by means of adhesive strips passed over the lids, so as to keep them in apposition. If severe inflammation ensue, it may be necessary to resort to bleeding and general antiphlogistic treatment: this, however, is but rarely necessary.

It is not my intention to enter further into the various disputed points with which the subject of strabismus abounds. So much has been said on it since the operation was first introduced into this country, that the profession is absolutely weary of the subject. Those who wish to study it in detail, I would more particularly refer to the writings of Messrs. Bennett Lucas, Duffin, Elliott, and C. R. Hall.

Paralysis of the Muscles of the Eyeball.

Sometimes, instead of the irregular action witnessed in cases of strabismus, we find the eyeball nearly or altogether deprived of the power of motion. Of course, if all the muscles are paralysed, then the eyeball will be completely immovable, and remain perfectly fixed almost in the centre of the orbit; a condition to which the term *luscitas* has been applied. This, however, is a comparatively rare disease, but when met with it must be subjected to the treatment I shall have presently to mention for a more common variety of paralysis of the muscles of the eye.

The most frequent form of paralysis of the eyeball which we observe, arises from disease of the *motor oculi*, or third nerve, and which is recognised by the following symptoms: the upper eyelid is observed to droop, and cover the front of the eye, the patient having no power to raise it by a voluntary effort; if the eyelid be elevated with the finger, the globe is found to be turned directly outwards; if the patient be requested to look inwards, upwards, or downwards, he has not the power to do so,—the sound eye moves in any of these directions, but it is unaccompanied by a corresponding movement of the affected eye; the pupil, too, is generally more dilated than that of the sound eye, and motionless. This expanded and inactive condition of the pupil gives to the eye a dull, vacant appearance, as if it were amaurotic, which it usually is not. Vision, however, is apt to be slightly impaired, as might be expected, from the dilated and immovable state of the pupil, and the almost motionless condition of the eye.

The symptoms I have detailed, then, clearly point to some morbid condition of the *motor oculi* nerve, or of some portion of the brain with which it is connected, because we recollect that the branches of this nerve are distributed to the levator palpebræ, the rectus superior, inferior, and internus, and to the inferior oblique, as well as to the lenticular ganglion, the source of the ciliary nerves; and thus we are enabled to account

for each symptom with the utmost certainty and precision.

In addition to the symptoms previously enumerated, the patient at first experiences double vision, when the superior palpebra is raised, or when it does not completely cover the eye; a symptom which is owing to a want of correspondence in the direction of the two eyes. Vertigo is another troublesome symptom frequently complained of, more particularly when the patient attempts to look at any object with the paralytic eye; and very often headach, and other signs of cerebral disorder, exist.

In some instances the disease is combined with paralysis of other parts, when it may be reasonably referred to a cerebral origin: thus, in one case which came under my observation, the paralysis attacked the muscles supplied by the third nerve of one eye, and then extended to those of the other, which was succeeded by amaurosis of both eyes, the paralysis of the muscles ceasing, but vision remaining permanently destroyed. In other instances, however, it would appear to be merely a local affection, and originating probably in some disordered action of the trunk of the nerve after it has passed out of the cranium. I have known it to result from a blow received on the orbital region; in these latter cases the patient's health will not be much affected. Sometimes this disease appears to come on without any obvious cause, and it is observed to attack all sorts of persons, as well those of a delicate and spare as those of a more robust and vigorous constitution.

Dr. Mackenzie thinks that this affection is sometimes of a rheumatic character, being excited by exposure to cold, in the same way as paralysis of the muscles of the face is frequently excited. I confess that I have not seen any cases that appeared to favour this view. The branches of the motor oculi nerve are very differently situated to those of the portio dura, the latter being much exposed to the action of cold, as from a side-wind and the like, which is not the case with the former.

With respect to the treatment of this affection, if the case be of recent origin, and occur in a strong person, we should commence with bleeding freely from the arm, afterwards applying cupping-instruments to the temple or nape of the neck, with counter-irritants to the neighbouring parts, the internal administration of mercury, and occasional purgatives. In more delicate individuals, and in such as have not exhibited symptoms of plethora, either general or local, or in whom the disease has been somewhat protracted, I have found a perpetual blister to the temple, with the internal exhibition of mercury, to answer very well. Generally speaking, this treatment is successful, but if the affection have assumed a chronic character, or if it be connected, as it sometimes is, with organic disease of the brain, the chances are less favourable. I have observed several instances in which, combined with antiphlogistic treatment, mercury had been freely exhibited without producing its peculiar effect, and that in such cases no impression has been made on the disease. I have also noticed that in cases in which recovery was brought about, the improvement usually commenced from the first appearance of the mercurialisation of the system; and hence I have been led to infer that mercury is by far the most efficient agent in the cure of this paralytic affection of the nerves of the eyeball. In cases in which the treatment I have mentioned has failed to produce any beneficial result, it may be proper to advise a complete change of locality, and when practicable a sea-voyage, or a protracted residence in a warmer climate.

It is difficult at present to say how far the new operation of dividing the tendons may be applicable to cases in which the opposite muscles are actually paralysed. I was lately consulted by a gentleman who had been for several years the subject of a paralytic affection of all the branches of the third nerve, in whose case I advised, as a matter worthy of trial, the division of the external rectus in addition to the removal of a portion of the integument of the superior lid. He has not as yet, however, made up his mind to submit to the operation.

Paralysis of the Sixth Nerve.—It sometimes happens that the external rectus muscle alone is the seat of paralysis; the eye is, of course, then turned inwards, and the patient is unable to direct it outwards, even when the opposite eye is closed. This affection is apt to be overlooked in its origin, or only regarded as ordinary strabismus, and is neglected, so that the paralysis becomes confirmed and is irremediable, except perchance it might be benefitted by the division of the internal rectus, which would be somewhat doubtful, inasmuch as there would still be other antagonist powers to keep the eye directed towards the inner canthus.

It is remarkable that these cases of paralysis do not appear to throw any light upon the obscure points connected with the physiology of the nerves and muscles of the eyeball. It might be supposed that in a case in which all the muscles supplied by the third nerve were paralysed, it would be a very easy matter to make out the functions of the other nerves. Such, however, is not the case. It is true that we see clearly enough what is the function of the sixth nerve and of the muscle to which it is distributed; but, with respect to the fourth nerve and the muscle which it supplies, nothing certain is as yet elicited. We see only one movement and that is directly outwards, effected by the external rectus. Whether or not the fourth nerve is generally implicated in the affection, when the third is the subject of paralysis,

we can only conjecture. Such, however, is not an improbable supposition, when we recollect that the origins of the two nerves are not very remote; and I think I have somewhere met with the remark, that the fourth might be almost regarded as little more than a branch of the third nerve.

Dr. Jacob, in a highly-interesting paper on the paralytic affections of the eye, which has recently appeared in the "Dublin Medical Press," has drawn attention to a peculiar motion which he has observed in some cases of paralysis of the orbital nerves. He has noticed a semirotary movement of the globe from within outwards, and this motion he presumes to be caused by the action of the trochlearis muscle. This movement I have lately had an opportunity of witnessing in a case in which the whole of the muscles of the eyeball were apparently paralysed, every movement being totally suspended, the levator palpebræ as well as the iris being likewise paralytic, with the exception of the semirotary motion referred to by Dr. Jacob. It is worthy of remark that in this case, now that the power of motion is returning to all the muscles, this peculiar movement is no longer noticeable. This semirotary motion, too, I ought to have remarked, was only observed when the patient was told to endeavour to move his eye about, the organ being at all other times perfectly passive. I am disposed to attribute much weight to the opinion of this able surgeon, but still I must be permitted to think that there are many objections to this view; indeed, I doubt if this movement can be referred to any other cause than that of an imperfect action which the muscles, though almost perfectly paralysed, may still retain. Moreover, we find that when the muscles of the third nerve are paralysed, the eye is constantly turned towards the outer canthus by the external rectus; and we may presume that, in case both the third and sixth nerves are paralysed, such a power as this, which is attributed to the trochlearis, would give a distinct direction to the eye, and which would be, to a certain extent, permanent. That a movement of this description, observed only in a case of extensive disease, and ceasing to be noticed on the restoration of the impaired functions, can be fairly regarded to be one of the natural actions, is, I confess, more than I can at present bring myself to believe. It would be difficult also to imagine that a muscle, so curiously contrived and supplied with a separate nerve, as the trochlearis is, should be destined to fill no other office than that of producing a semirotary motion of the eye,—a motion, too, which is not observable except when the muscles at large are completely paralysed!

I am not, however, about to enter into the discussion of this physiological problem, merely remarking that, notwithstanding the multiplicity of observations and the numerous experiments (generally unsatisfactory and frequently contradictory) that have been made, I think that the simple explanation I have offered is open to as few objections as any which I have yet met with. It is based upon the uniformity in the direction of the two eyes to which I alluded in the commencement of this lecture, and which I consider to be effected by the peculiar arrangement and independent actions of the muscles and their nerves. By these, two distinct and independent sets of motions are produced. There is a class of associated movements in which the two eyes are directed forwards, inwards, upwards, and downwards; and there is another class in which the movements are dissociated and the eyes directed laterally. As these are distinct and independent movements, so they are accomplished by two distinct classes of muscles, and these muscles have distinct and independent nerves. Those movements in which the eyes are directed forwards, inwards, upwards, and downwards, are, I conceive, effected by the muscles supplied by the third pair of nerves; whilst those movements in which the eyes are directed laterally (one eye being turned outwards and the other inwards), are effected by the muscles supplied by the sixth and fourth pairs of nerves, viz., the external rectus and the trochlearis.

With these observations, I shall conclude what I have to offer on the diseases of the eyeball, and in my next shall briefly address you on those of the appendages.

RESEARCHES

INTO THE

PATHOLOGY, PHYSICAL SIGNS,

AND

TREATMENT

OF

VALVULAR DISEASES OF THE HEART,

IN CONNECTION WITH THE

SOUNDS OF THAT ORGAN;

ILLUSTRATED BY CASES.

By Thomas Moore, Esq., M.R.C.S., late Secretary to the Dublin Medico-Chirurgical Society.

Part II.

The annexed case will be found interesting, from the connection it maintains with, and its similarity it bears to, the two preceding, thus serving as an additional means of illustrating the form of valvular disease treated of.

Case 3.*—Permanent patency of auriculo-ventricular apertures; bellows-murmur ac-

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* Continued from p. 652.

companying first sound; valvular structures shortened, retracted, uneven, presenting many fleshy protuberances on the surface; second sound unimpaired in its clearness; valves of aorta and pulmonary artery free from disease; the coats of these arteries slightly diseased; liver and kidneys diseased.

History.—A woman (Anne M'Mullen), sixty years of age, once living in comfortable circumstances, was admitted into the hospital, July 5, 1839, having been for many years past subject to a chronic cough, less severe in summer, aggravated in winter and bad weather, which being neglected, was followed by shortness and difficulty of breathing. Two years ago, when labouring under great mental distress, from constant fretting, she was often troubled with flutterings of the heart, strong palpitations, and many of the other symptoms of deranged circulation: from this time she was more liable to a recurrence of the chest affection, on the least exposure to cold, but was not completely laid up until Christmas; when, from her impoverished condition, being obliged to sleep on a damp floor, deprived of the necessaries of life, all her previous complaints became more acute, and death from suffocation had nearly been the consequence: this attack being somewhat subdued, she obtained a little ease; but, from a repetition of the causes, the disease increased to a more distressing amount, the slightest exertion bringing on violent beatings of the heart, great dyspnœa, and orthopnœa. The malady having, three months since, arrived at its maximum, she then, for the first time, perceived a swelling in the abdomen, from whence it spread downwards to the thighs, legs, and feet, and in the course of a few weeks was diffused generally over the body; thus she has continued prolonging a miserable existence, with slight intervals of ease, afforded by the medicines administered.

Symptoms.—She now lies for the most part on the right side, moaning, respiring with great difficulty, being almost suffocated by decubitus on the left side, or back, not so much so by sitting up; her face is bordering on a leaden hue; nose, lips, and malar prominences of a bluish black colour; eyes muddy and watery; right eyelid and side of face swollen, from the quantity of serum which gravitates and fills the cellular tissue; there is general venous turgescence of the jugulars, and temporals in particular, also of the other superficial blood-vessels of upper and lower extremities; in some of these (the jugulars) a slight undulatory motion (not so well marked as in Case 2) is observable; from the œdematous state of the thoracic integuments, and the distress occasioned by change of posture, no satisfactory results could be obtained from percussion.

Physical Signs of Chest and Heart.—The heart's impulse very weak, can with difficulty be felt under left mamma, its action is extensively audible, but almost obscured by bronchitic râles; on checking the respiratory movements for a few moments, a distinct "whizzing noise" can be heard setting in with the first sound, accompanying it altogether, continuing till the commencement of the second sound, rendering this not so clear as in the normal state, but not to that degree that it should be inaudible; it appears as if the "whizzing-murmur," having attended the first sound, did not cease with it, until the clear, sharp, well-defined clack of the second sound succeeded, but commenced again before the termination of the latter; thus preventing its complete cessation, causing the two sounds in the cardiac region to be confused, and occupying the interval of repose between the termination of the second and the commencement of the first sound; in the degrees of intensity of this "whizzing murmur," very plain at the lower and middle portions of the sternum, and to the right of this bone, several differences are observable, being at one period, when the circulation is accelerated by muscular exertions in bed, or retarded during the act of retaining her breath, loud, forcible, and vigorous, but gradually diminishing in its brinkness, as the circulation becomes more tranquillised; it at length abates to such a degree of fineness, as to be a mere shadow or trace of the previous murmur: the stage intermediate between these two, is the one which, for the most part, exists during the third stage, or that in which the whizzing murmur is indistinct, almost inaudible or absent, the second sound can be heard clear, and predominating over the first. Along the course of the aorta, in the subclavian or carotid arteries, no abnormal noise can be detected; the action of these vessels is much excited, their pulsations being visible at a distance from the bed; by the touch, however, a discrepancy is at once detected, between their apparent fulness and actual strength; but a feeble stroke being imparted to the finger after each contraction of the heart. Pulse 100, small, weak, and regular in its beats.

The respiration is much obstructed by muco-crepitating and other bronchitic râles, chiefly seated in the left lung, less intense posteriorly; in the right lung the respiratory murmur is feeble; resonance of the voice somewhat œgophonic; expectoration copious, frothy, and tenacious.

Abdomen considerably swollen, dull on percussion, not pained by pressure, and affording a fluctuation when tapped; in consequence of which, and the impossibility of practising ballottement, it is difficult to ascertain the state of the solid viscera; passes only a small quantity of urine, about a cupful at a time, and frequently in the day, it is high coloured, and when tested by heat, did not afford an albuminous deposit; tongue moist; bowels regular; lower extremities œdematous.

℞ *Tincture of digitalis*, ℥j;
Camphor mixture, ℥vj. M. Let one ounce be taken three times a-day, with a tablespoonful of electuary of senna with tartrate of potass.

℞ *Calomel*, gr. ij;
Ipecacuan powder, gr. j. Make into a pill to be taken every four hours.

A blister to be applied to the chest. The patient to be allowed four ounces of port wine in the course of the day.

Under this treatment a temporary improvement in her health was effected; the swellings in the different parts of the body decreased; the secretion of urine was increased; respiration was performed with more ease; the palpitations were not so violent nor so frequent; she could sleep more soundly, and for a longer period than she was accustomed to for months past, and did not entertain the same dread and horror of immediate suffocation she had been subject to previously. On the 13th, eight days after her admission, the "whizzing murmur" was observed to be very distinct, even more so than had been noticed since the first examination, sometimes resembling a deep cooing, at other times, a loud rasping noise, but generally ranging between it and the "blowing murmur," commencing with the impulse, persisting during the entire of first sound, not connected with the second, nor passing into the large-sized vessels; the maximum of intensity being situated between the cartilages of third and fifth ribs, and midway between the fourchette of sternum and xiphoid cartilage; pulse quick, small, weak, and regular in strength.

Three days after this report was taken she died, at three o'clock, A.M.

Autopsy.—General œdema of surface; lividity of parts noted during life, and great excoriation of the organs of generation and inside of the thighs from the constant dribbling of urine.

The heart in pericardium appears enlarged, owing to the mass of blood in the auricles; after the removal of which it can scarcely be said to surpass in size one in a healthy state; the walls of the left ventricle and septum ventriculorum are double their natural thickness; whilst its cavity is so much diminished as with difficulty to admit the passage of the forefinger; the left auricle is more capacious, and its walls more thickened than usual; the right ventricle partook somewhat of the diseased condition of the left, but not to the same amount; whilst the cavity of the auricle was enormously increased, and its walls so attenuated as to be quite diaphanous, but a slight degree more dense than the coats of one of the middling-sized veins.

The right auriculo-ventricular aperture must have remained permanently open, from the incapability of the tricuspid valves performing their proper functions; the shape of two-thirds of the valves was nearly destroyed; the valve, peculiar to the pulmonary artery, from its greater length, retains more of its original figure than the others; its texture at its attachment being thin and transparent, whilst its unattached or free edge is three or four times more dense than usual, occasioned by a red, fleshy, or fibrous growth, about half an inch long in the transverse direction; between this and the next valve is a round substance, from its size and figure bearing a resemblance to a garden pea, springing from two or three tendinous cords and the base of the valves, reddish and transparent at its apex, of a dirty white and fibrous appearance at its root; the other valves are scarcely three lines in breadth, one of them so narrow, so shortened, so retracted, that were it not for the remaining edge, the tendinous cords affixed to it, and the nodules observable upon it might be said to be completely removed; the line encircling the entrance into the ventricle feels rough, uneven, somewhat hard and gritty, corresponding to the valves most diseased, whose free borders are loaded with tolerably large, fleshy-coloured semi-transparent bodies; the chordæ tendineæ are much shorter and thicker than in a healthy organ; the fleshy columns, few in number, are greatly hypertrophied.

The same description will almost suffice for the left auriculo-ventricular aperture; the aortic mitral valve, being of the two more free from disease, not materially diminished in length, thickened at the base, and surmounted at its apex by those fibrous growths noticed at the right side of this organ; the other valve is scarcely one-fourth its usual length: so far does the process of absorption or deterioration of its structure appear to have progressed, that it seems merely to consist of a number of short, thick, tendinous cords inserted into a rough, rugged, fibrous tissue, about two lines distant from the tendinous ring, placed between the auricle and ventricle; the fleshy columns in this ventricle, also, are hypertrophied, particularly that one to which the chordæ tendineæ of the valve most diseased are attached: the arterial valves present a healthy aspect; a little above the aortic valves there is an aggregation of yellowish-white patches, varying from the size of a pin's-head to that of a fourpenny-piece, situated beneath the serous membrane between it and the muscular coat, from which, being of soft consistence, it can be detached by scraping; in other places it consists of a discoloration of the interior, resembling those white patches so frequently seen on the exterior of the heart.

In the right side of chest the lung and intercostal pleura were united in the superior and middle portions by strong adhesions; below this, between it and the diaphragm, we found about a pint of straw-coloured fluid; none existed in left pleural cavity, the entire lung being firmly adherent to opposed pleura by strong and tough bands; the right being com-

pressed by the liquid, was smaller than the left lung, crepitated much less, was of a darker colour externally, of a livid or dark green hue; the pulmonary texture of both was gorged with black fluid blood, which flowed from the incised surfaces in great quantity, being mixed with a quantity of froth; the mucous membrane of trachea is of a deep red, darkening in colour, and appearing somewhat hypertrophied, as the large and small bronchi are exposed to view; all the tubes are loaded with frothy, sanguinolent, tenacious sputa.

Upwards of four quarts of straw-coloured fluid escaped from the abdomen; on cutting into it the intestines were small, pushed upwards, and compressed against the spine; the liver is larger than natural, chiefly proceeding from increase in the right lobe; its exterior presents a mottled appearance on a slate-coloured ground, with a large opake yellow patch on the upper surface of the right lobe; its texture hard and resisting; when divided, the cut surfaces present precisely the mottled appearance of a grated nutmeg; the gall bladder full of brownish, black bile, staining deep yellow; spleen smaller than natural, about the size of a turkey's egg, contains a small quantity of dark blood, and when incised presents a mottled surface, not unlike the liver; the kidneys, left in particular, are diminished in size, atrophied, their interior of a brownish red, exhibited on the incised surfaces an appearance, as of an aggregation of small, transparent vesicles, by which the tubular structure in many parts was obliterated, scarcely a trace of it being visible; coats of the bladder much thickened, otherwise no change was observable.

Three cases have now been related bearing a strong similarity to each other in their history, symptoms, physical signs, and morbid appearances, illustrating, to a marked degree, the permanently patulous state of one or both auriculo-ventricular apertures; and whether we regard them collectively, or study them individually, we shall find them replete with interesting matter: in this latter, by pursuing the same order observed in the preceding, we will first consider the period at which the cardiac disease set in, and whether it resulted from the metastasis of some other disease prevalent at the time in the system, or originated in an acute or subacute idiopathic inflammation of the serous and fibrous structures of the valves.

Second. Whether the process of disorganisation which subjected to its influence the valvular apparatus, had its origin in a primary or secondary form of inflammation.

Third. In reviewing the coexistence of the physical signs with the morbid alterations in the valves, as has been already done in the others, and in connection with the history, symptoms, and morbid changes in the other viscera, let us consider to which of them in particular we can trace the source of the œdematous swellings, and which organ chiefly contributed to the termination of life.

That there is every reason to suppose the internal structure of the heart did not escape on every occasion, when the lungs were attacked with acute inflammation from repeated exposures to cold, hardship, and fatigue, is confirmed by the history given, the symptoms described, and the period assigned to each; but whilst, from the anatomical and pathological investigations into the sympathies subsisting between the brain and heart, from the numberless instances recorded, and from a collection of observations made to this effect, we cannot doubt, much less deny, how great an influence the various passions, the excited and depressed states of the mind exert over the centre, and consequently over every part of the circulation; yet, in the cases under consideration, we must disregard them as being but indirectly connected with, and but trivially contributing to, the valvular disease present.

To an acute inflammatory action of the endocardium, and the fibrous structures of the valves, it would be injudicious hastily to attribute these alterations, particularly so, when by a reference to its general consequences, thickening, rigidity, and induration of the valves, with contraction of the apertures to a greater or less degree, we shall not find our observations corroborated nor supported by analogous cases; to a slow, insidious, subacute, inflammatory process, they are rather to be attributed, which in its progress committed the depredations, rendering the valves inefficient in the execution of the offices assigned to them; disorganising their structures and functions, giving origin to the morbid growths on their surfaces, borders, and attachments, being chiefly instrumental in promoting the process of absorption, retraction, contraction, and shrinking, and involving in disease other portions of the heart so immediately connected with the valves.

Herein, therefore, we possess a cause, in itself sufficiently explanatory, without resorting to the much-disputed doctrine of metastasis; and by thus steering clear of the "shoals and quicksands" which beset this subject, avoid being involved in an useless and fruitless discussion, tending in the present instance to no good result, but occupying time which may be better disposed of by inquiring into matters of greater importance. In this case, also, we possess a further exemplification of the variableness in the abnormal sounds accompanying the heart's action, and the various degrees of intensity, the different intonations they may assume, even in the short space of five minutes; frequently have they been observed to undergo several changes in their characters during the same minute; intermitting not only in the rapidity and regularity of their succession; in the multiplied forms of roughness and

briskness; in the constancy of their fining down to certain degrees of indistinctness and total absence; but also in being renewable at pleasure, reproducible by certain manœuvres, and augmentable by certain experiments performed on the respiratory organs.

To isolate any single organ in this and similar cases, and stamp it as being the sole cause of her death, would amount to absurdity, and exhibit an unpardonable degree of ignorance of the morbid alterations which had occurred and were still progressing in other viscera of vital importance to the system; whose functions being interfered with, secretions altered in part, or arrested *in toto;* and structures having undergone irreparable changes, participated in adding, day by day, to the catalogue of distressing symptoms, and contributed in a great measure towards the final break up in the constitution and ultimate dissolution: these are facts of the greatest moment, which are of essential importance to bear in mind, when subjecting our patients to any particular line of treatment.

Another case has lately come within the range of my observation, which I shall add to the preceding, not merely from the intrinsic value it possesses, as being linked with the others, by the symptoms, physical signs, and morbid appearances, but also on account of other particulars, which cannot fail to sanction its introduction.

OBSERVATIONS
ON THE
PHYSIOLOGY OF THE LIVER,

SHOWING THAT FUNCTIONAL DERANGEMENT OF THAT ORGAN IS NOT THE PRIMARY CAUSE OF SUPPRESSION OF THE CATAMENIA.

By J. R. Hancorn, Esq., M.R.C.S., &c., London.

The catamenia are a monthly evacuation from the uterus, which appears by nature to be intended to fit that important organ for conception and for the nutrition of the fœtus; that it is a most necessary function to preserve health seems manifest. It is of the utmost importance that it should be strictly attended to, not only by the married but also the single woman. During pregnancy this function is suspended, and lactation appears to be a substitute for it. A recent writer has lately advanced a theory, to the effect that absence or presence of this function is not essential to the healthy condition of the female. This hypothesis sounds erroneous, and it is one in which I cannot coincide; and for this reason, viz., that the evacuation is a secretion, *sui generis*, and of so universal a character, and at such regular and stated periods, that I cannot conceive but that it was ordained for some significant purpose. Ancient writers have considered it as merely an effort of nature to relieve a sanguineous temperament; but this is not borne out by fact, inasmuch as those of a spare habit, and others of a lymphatic tendency, often secrete this fluid abundantly. We find, also, that after the age of about forty-three, or from that to fifty, this secretion ceases; and yet it is a well-ascertained fact, that at about that period females very frequently become more plethoric, which is instanced by their becoming more stout and fat; which latter is evidence of a greater supply of blood than is required for the purpose of sustaining life, and repairing the natural decay of the body; for the cellular tissue of the human body may be compared to the store-rooms in a house, where all that is superfluous, and not required for present use, is stowed away. And, oh! how beautifully and economically this is arranged in the human body; how equally is it disposed of; rendering the form beauteous to the eye, and yet so disposed that the burden may be easily borne. Again, chemical analysis has sufficiently demonstrated the fact, that there is no great analogy between the constituents of this secretion and that of blood.

That there is general indisposition of the system, and ill health attending the suppression of this evacuation is sufficiently clear; but the same writer endeavours to prove that the ailment is not consequent upon the suppression of the function of the uterus, but that it is a symptom of, and subservient to, functional derangement of the liver. In connection with suspension of the catamenia we frequently, and I may say generally, find functional derangement of the liver; but may not this latter also be fairly attributed to an impure state of the sanguiferous system?

One reason which suggests itself to me, why the liver cannot be considered the primary cause of suppression of the catamenia, is the fact, that by introducing iron, by absorption, into the blood, we very frequently succeed in reproducing it; whereas the same treatment would materially aggravate the evil, if the liver be the primary cause. I offer it as a suggestion, that a morbid condition of the blood is the primary cause, and that the liver is the organ of all others next in importance. I am ready to acknowledge, and shall endeavour to show that its derangement may act as a secondary cause, and that it is the organ to which attention should be more particularly directed; in order to show which I must endeavour to advance proof that the liver is placed in the body not as a secreting organ, but for the sole purpose of acting as a *filter* to purify the venous blood, and that this is the true physiology of that organ. Kiernan has introduced a new, and now generally-received,

anatomy of the liver; but as I am only endeavouring to prove that the liver acts as a filter, I shall confine my attention to the anatomy only so far as to give the distribution of the portal veins after they have entered the liver. After dividing into two primary branches, the one going to the right and the other to the left, they ramify, and subdivide through the interlobular spaces in the substance of the liver, and form a set of vessels which surround the lobules, and anastomose freely with each other, and called by Kiernan the interlobular portal veins; from these branches are sent off into the substance of each lobule, and are joined by minute branches of the hepatic artery, when the latter *has performed* its function of nourishing the liver, and when its blood (the hepatic arterial blood) has already assumed a *venous* character.

From the convoluted terminating branches of the vena portæ, after the hepatic artery has joined it, the bile is secreted, or rather, I should say, *excreted* in the minute biliary ducts, from the contents of each lobule; and the residual blood purified by the excretion of the bile from it, is then returned by the intra-lobular hepatic vein to the sub-lobular vein, upon which the lobule is based: these veins converge, and form the venæ cavæ hepaticæ, by which the *purified* blood is conveyed by the ascending cava to the right auricle of the heart, for transmission through the right ventricle, for further purification in the lungs.

Every organ in the body, excepting the lungs, is all-sufficient and complete within itself for the performance of its peculiar function; the brain, the eye, the kidney, for instance: then why (unless the function of the liver is one of purification and not of *secretion*) speak of purification of the blood in connection with the function of the liver?

Bile is a heterogeneous chemical compound, very different from the simple chemical constituents of the saliva, pancreatic secretion, and others, the uses and effects of which are well known. It appears, in truth, a mass of impurity, derived from the whole of the circulation of the abdominal viscera; and, in fact, if that impure blood were transmitted immediately to the heart, and thence to the lungs, their delicate texture would, no doubt, become seriously deranged, and therefore nature has wisely ordained that it should be purified by passing through the filter, and the refuse discharged into the nearest convenient part of that tube which conveys away the general refuse of our aliment.

If the bile were intended for the purpose of assisting digestion—for the purpose of separating the chyle from the chyme, we should expect a pure, mild, bland fluid, like the others which I have spoken of, instead of which we find a nauseous one; sometimes green, or yellow, and at others black; which modifications must be attributable to the state of the blood, even as we see in the changes of the urine, and other secretions. When the bile is black or green, a person is generally unwell; but whether is it from the black bile, or the morbid condition of the blood which generated the bile?

Again, the bile is said to promote the peristaltic action of the intestinal canal; but why is this requisite—why are not the muscles of that tube sufficient? We find the constrictors of the pharynx and œsophagus capable of performing their duty without a stimulating fluid; and how is it that we find the peristaltic motion unimpaired, when there is absence of bile, such as in jaundice? That the bowels are torpid under such circumstances, I know; but this may be accounted for, by the suppression of the secretions generally.

If the liver is an important gland, for the purpose of secreting an essential fluid, why is it not supplied with arteries proportionate to its importance? Such is not the case; there is a great paucity of arterial blood as compared with its great bulk. In proportion to the importance of an organ, we perceive a large supply of arterial blood. Look at the brain in size as compared with the liver, and observe the great contrast in the supply of blood. Why, even the kidneys have arteries of nearly the magnitude of those of the liver.

The pancreas is designed to effect chylification, and is capable of doing so without the assistance of the liver. We have nerves, blood-vessels, and glands, arranged in pairs, in various parts of the body, to execute the same function, as is instanced in the kidneys, in order that if one is deranged or destroyed, the other may carry on the function: an effect which could only be attained by an ever-watchful Providence. But then their anatomy, physiology, and the chemical character of the fluid is the same; and in no other part of the human apparatus do we find two organs, differing widely (as the pancreas and liver) in their anatomical structure and texture, for the performance of the same function.

In every other organ of secretion, its duty is carried on by means of pure arterial blood: then does it not strike us as a most anomalous circumstance, that the function of the liver, which hitherto has been considered of such paramount importance in the process of digestion, should be carried on by *impure blood*, which has already performed its task, and is on its journey back to the lungs, in order to be there again rendered fit for general circulation?

But though I cannot assign to the liver the office of a secretory gland, nevertheless as a *filter* I conceive it to be an organ inferior to none: for unless it is kept in a healthy condition, the power of purifying the blood will be in a great measure lost, and then the great mass of blood will be in a

much greater state of impurity, and consequently the general health must suffer. When great obstruction takes place, then abdominal dropsies follow; for if the return of blood meets with strenuous opposition, there is no other termination more probable than that of effusion.

EFFECTS OF CALCULUS IN THE FEMALE CHILD.

To the Editor of THE LANCET.

SIR:—The following is the only case of the kind I have met with in the female out of nineteen thousand children who have been under my care; I consider, therefore, that if briefly recorded it might be worthy of notice in your valuable Journal.

Ruth Mole, aged four years, was brought to me labouring under retention of urine, the mother stating that the child had not passed any water for two days and nights, and that the bowels had not acted during the same time.

July 12. There is considerable fever; great pain; constant moaning; the head hot, and tossed from side to side; the pulse small and frequent; the tongue dry, and covered with a brownish coating; there is some delirium; the abdomen is hot and tense; the bladder perceived to be much distended, extending up to the umbilicus; the external organs of generation are inflamed; the clitoris distended; the nymphæ slightly œdematous.

The distress of the child demanding immediate relief, a flexible catheter was introduced, and twelve ounces of turbid urine were drawn off, and an active aperient was ordered.

13. Immediate relief followed the abstraction of the urine, and the child slept for four hours. The bowels have acted twice freely; there is constant inclination to go to stool, and considerable straining causing the bowel to prolapse. No water has passed since yesterday; the bladder is again palpably distended, and the same state of the external organs perceptible, but the fever has much abated.

The prolapsus ani and the state of the external organs of generation so analogous to what occurs in boys with retention of urine from urethral calculus (in whom the erection of the penis with œdema of its integuments are the principal symptoms), led to the suspicion that the cause of retention in this instance might be calculus, which suspicion was found to be correct, by the introduction of a probe into the urethra. It was, therefore, determined to leave the bladder as it was, unless urgent symptoms supervened, in the hope that the pressure of the urine might expel the stone from the passage.

14. The child is much the same in all respects, but the urine has dribbled away in small quantities since yesterday. The stone may be felt with a probe still lodging in the urethra. After a little trouble this was caught hold of by means of a small pair of common forceps, and brought forward to the orificium urethræ, through which its size prevented its coming without violence sufficient to produce laceration; a small incision was, therefore, made, as less likely to be followed by incontinence of urine, and the stone extracted.

16. All symptoms relieved, but there is incontinence of urine.

22. The child is free from all symptoms, the incontinence of urine having ceased for the last four days.

The calculus is five lines in diameter, weighs eleven grains, and is nearly perfectly round. I believe a calculus of any other shape *could* hardly produce such symptoms in the female child. I remain, Sir, your obedient servant,

GEORGE A. REES, M.R.C.S.
5, Artillery-place, City-road,
July 24, 1841.

EMPLOYMENT OF CREOSOTE FOR THE CURE OF AFFECTIONS OF THE EYE.

To the Editor of THE LANCET.

SIR:—Two years since I suffered severely from inflammation of the eye, occasioned by a cold, and which, perhaps, from inattention, assumed a chronic form. Frequent attempts at removal were made; first by refrigerant and sedative collyria; then by astringents zinc, nitrate of silver, &c., which produced but slight benefit. Accident, however, shortly did all that I desired—effected the cure.

Whilst replacing on the shelf a bottle of creosote, a small portion of that which usually lodges round the stopper dropped into the affected eye. For a few minutes the pain was extreme; the existing inflammation was also superadded to: these effects were only temporary, soon subsiding into ease, and a sensation of coldness in the eye was experienced. From this time the inflammatory action greatly weakened, till complete restoration took place: subsequently I reflected upon the palpable and sudden alteration for the better, and determined to put the means to the test of experiment, to confirm or annul the claim of the agent. The comparatively few cases, however, which have since fallen under my notice, or rather under my immediate care, do not justify my putting the remedy forward as a specific; yet, in the majority of ophthalmic cases, particularly when of a chronic nature, I believe none of the means

now usually employed promise fairer, as a therapeutical agent, for their speedy removal. Three cases are inclosed, in addition to my own, in which I have been happy enough to succeed.

Case 1.—A man, aged 40, temperament nervo-bilious; symptoms much as usual, but severe; redness of the conjunctiva adnata, &c.; excessive pain, intolerance of light, and lachrymation; thirst; headach; preternatural heat of body; great pulsation of the temporal arteries, and other febrile symptoms:—venesection to twenty ounces; calomel and jalap purges, abstinence, and poppy decoction. These but ill succeeded. Sedative lotions, tartar emetic in nauseating doses—slight benefit. Calomel and opium three times a-day: vessels of the conjunctiva still distended, but less bright; general health better; less headach, &c. Patient thoughtlessly absented himself for two days: on next appearance the eyes apparently much the same, but complains of dimness of sight; stimulating lotion; no evident change. Creosote lotion* to be used three times a-day. At the expiration of a week, less redness, and no dimness of sight. I have once seen him—quite recovered.

Case 2.—A young man, aged 18 (lymphatic temperament), while at his usual employment had a piece of lime accidentally thrown into his eye, which produced inflammation, that ended in an ulcer near the internal canthus. Upon a subsequent attack from exposure to cold winds the cicatrix spread to a great extent, bordering on the margin of the pupil, attended with indications of chronic inflammation. As far as I conveniently could, the excrescence was removed by knife; the after-application of creosote, in an undiluted state, diminished the remaining portion, and dissipated the inflammation.

Case 3.—A child with *ophthalmia tarsi*. It yielded to none of the usually-employed remedies, but gave way to the application of the creosote ointment, and the internal administration of the disulphate of quinine. I am fully aware how generally the therapeutical properties of creosote have been called into notice, such as an application to burns and ulcers, in herpetic, furfuraceous, squamous and crustaceous skin affections; in bronchitis to promote expectoration; in toothach; in atonic rheumatism, &c. &c.; but I have not yet seen any account of its use in affections of the eye, which will, perhaps, excuse me, should such have been the case, for thus taking attention from more important matters. Your obedient servant,

G. T. Black.

York-street, Bristol, July 29, 1841.

* The formula of the lotion employed, gradually increasing the strength according to circumstances, is

℞ *Creosote*, m. iij;
Compound tincture of lavender, m. xx;
Distilled water, ℥ss.

DISLOCATION OF THE WRIST.

To the Editor of The Lancet.

Sir:—The possibility of the occurrence of the above accident being questioned by high authority, and recently in your Journal, I beg to forward for publication the following case, which removed from my mind all doubt on the subject. I have the honour to be, Sir, your obedient servant,

Ralph N. M'Dermott, Surgeon.

24, Percy-place, Dublin,
July 28, 1841.

A young gentleman, ætat. between 14 and 15, climbing over a high wall, and finding himself falling, instinctively put out his hands to break his fall. He came with all his weight on his out-spread palms, and states, that "his wrist was doubled under him," the inferior incisors cut deeply into the lower lip, and the left wrist was dislocated. I was sent for, and saw him in half an hour after the accident occurred. The carpus formed a tumour posteriorly, above which there was a depression. Anteriorly I could feel the ends of the radius and ulna, in the palm of the hand, which was semiflexed, and supported carefully by his right hand. He complained of a numb or dead sensation in the limb.

Reduction was easily accomplished, and the power of motion in a great degree restored to the joint. A splint and cold lotion were applied, both of which were laid aside after the second day, not being found agreeable to my patient. A professional friend saw this case with me, and at once concurred in the diagnosis of dislocation.

ACNE PUNCTATA AND ROSACEA.

To the Editor of The Lancet.

Sir:—Having at present under my care several cases of acne punctata and acne rosacea, and having exhausted all my stock of remedies, none of which have succeeded, perhaps some of your numerous correspondents may know of some remedy which may be successful; if so, I will be much obliged to them if they will let me know in the next number of The Lancet. Your obedient servant,

E. C., Surgeon.

Sunderland, July 28, 1841.

MORTALITY OF MOHAMMEDANS IN CALCUTTA,

AS COMPARED WITH THE

TOWNS IN ENGLAND.

THE effect of alcoholic liquors in abridging the average duration of human life, can only be determined by an appeal to statistical data; and although no perfectly precise deductions can be made from the facts at present in our possession, yet it may be admitted, that such a tolerable approximation can be attained, as is sufficient at least to show that alcohol produces a decided influence.

The annual rate of mortality in England and Wales, as deduced from the Registrar-General's Report, appears to be for the cities of this country, 2.7 per cent., or nearly 2¾;* that is, one death out of every thirty-seven persons in the population. Compare this with the following table:—

POPULATION AND MORTALITY IN CALCUTTA.

Denominations.	Population.	Average Mortality per Annum.	Mortality per Cent.	
English	3138			
Eurasians	4746			
	7884	277	3½	1 in 28
Portuguese	3181			
French	160			
	3341	417	12½	1 in 8
Western Mohammedans	13,677			
Bengal "	45,067			
Moguls "	527			
Arabs "	351			
Total Mohammedans	59,622	1607	2¾	1 in 36
Hindoos	157,418	9558	6 1/13	1 in 16
Armenians	636	25¾	4 1/25	1 in 25
Native Christians	49	3½	6¾	1 in 14

In Calcutta there are 59,622 Mohammedans, all of whom abstain, of course, from spirituous liquors; the deaths amount to 1607, or 2¾ per cent.† Here, then, it is remarkable, that we have the mortality of the town population of England equal to the mortality in the unhealthy climate of Calcutta, among one class of the population. It cannot be urged that the low mortality depends upon the population alluded to being natives of Calcutta, and therefore inured to the climate; because only 45,067, out of 59,622, were natives of Bengal. *There must therefore be some cause operating in England, equivalent in prejudicial influence to the baneful climate of Calcutta.* What can it be, if not the use of alcoholic liquors? In Calcutta, there are 3138 English and 4746 Eurasians; the conjoint mortality per annum of this population is 277, or 3½ per cent. The question now occurs, what is the mortality among the English *per se*? We should be apt *à priori* to think, from the habits of English residents, that the mortality will be greater than the number given. Accordingly, it is stated by a writer on the mortality of British India, that the deaths among the English in Calcutta, between the ages of 20 and 25, is 3.84 per cent.; from 25 to 35, 5.49 per cent.; from 35 to 45, 6.7 per cent.; from 45 to 55, 6.18 per cent.; and from 55 to 65, 8.4 per cent.;‡ the mean, therefore, of the mortality between the ages of 20 and 65, is 6.1 per cent.; or, triple the mortality of the country population of England. The mortality among the French

* Second Report, p. 81.

† Asiatic Journal, 1838, p. 890.

‡ Capt. Henderson in Trans. Asiatic Society, 1836, and India Review, 1837, p. 322.

and Portuguese is 12½ per cent.; while among the Hindoos it is 6½ per cent.; or, according to Dr. Stewart, 3.86 per cent. only. This rate is considerably higher than we should expect to find among a population so abstemious in their habits. It is to be accounted for, however, by the circumstance, that the Hindoos of Calcutta, consisting of families, include a much larger proportion of infant life * than is to be found among Mohammedans.—(From Dr. R. D. Thomson's pamphlet on "Digestion; the Influence of Alcoholic Fluids on that Function," &c.)

ST. GEORGE'S HOSPITAL.

MORTIFICATION OF THE HAND FROM AN EXTENSIVE LACERATION OF THE FOREARM.

Thomas Bachelor, aged 13, admitted July 2nd, under the care of Mr. Keate, with an extensive laceration of the right forearm, occasioned by inadvertently catching his hand in the cogs of a wheel. A great deal of blood escaped from the wound previously to his entering the hospital. Upon examining the part, the muscles in front of the arm were found to be completely exposed, a wound extending from the wrist some way up, and other scratches at the back part of the arm. The temperature of the hand, which was swollen, had greatly fallen, and he complained of numbness in the fingers with diminished sensibility. The edges of the wound were approximated by means of a bandage over some wetted lint, and a bladder of ice was kept over the part to restrain hæmorrhage.

3. Slept well; scarcely any pain in the wound; no hæmorrhage had taken place from it. The dressings and bandages were left undisturbed.

4. Rather restless during the night; tongue furred; pulse somewhat excited; all sensation in the fingers completely gone.

From July 5th to the 14th, the poor lad suffered much constitutional disturbance, the arm was extremely painful, and the wound suppurated freely. A line of demarcation finally set up about two inches from the wrist; the hand mortified, and from the heat of the weather quickly decomposed. On July 15th, he was brought into the operating theatre; Mr. Keate made a circular incision at the line through the skin and fascia; dissected these back; then divided the muscles with one sweep of the catlin to the bone; these he retracted with his left hand. He now divided the interosseous ligament with the point of his knife and sawed through the bones; three vessels only required ligature. Wetted lint was placed over the stump, and secured by a roller, and the patient removed to bed, the arm being kept slightly elevated with a pillow. Since this time the stump has been rapidly healing, the lad requiring some support, and occasionally small doses of calomel followed by a senna draught. Upon dissection, the joint was found to be exposed, and a probe could be readily passed into it; no fracture of either bone could be discovered. The arteries, when traced out of the mass of putridity, were found to be so diminished in calibre, as to be inadequate to afford sufficient blood to pass through them for the supply of the limb.

* Asiatic Journal, 1838, p. 890.

MORTIFICATION FROM BURN.

Dennis Sullivan, aged 49, admitted July 21st, under the care of Mr. Walker, with an extensive burn of the right arm, extending from the wrist to within about four inches of the shoulder-joint. The hand was greatly swollen, cold, and insensible; the skin of the forearm was without vesicles, of various colours, resembling the appearance seen in dry gangrene. In one part the muscles protruded through the skin, which had sloughed away; where the burn terminated a distinct line of demarcation had commenced, which encircled the arm; the part immediately above the line was of a bright red colour, swollen, and extremely sensible. Independently of this extensive injury, the patient had a large eschar of a dark brown appearance without vesication on his right side. The accident occurred from a spark having fallen upon the sleeve of his coat, which smouldered without kindling into a blaze; he was unable to divest himself of his coat, when he discovered it was on fire, before the mischief had been effected. Although three days had elapsed since the occurrence, nothing had been done for him. His arm was ordered to be constantly fomented. At six, P.M., Mr. Walker visited the patient, and made several incisions to relieve the tension of the forearm, which was quite cold; the scarifications did not cause the slightest pain; bloody serum escaped; the patient's pulse was weak and fluttering; the whole surface cold, and he was evidently suffering from low febrile symptoms. The arm was placed upon a pillow, and covered with a warm poultice. Bark and the liquor ammoniæ acetatis were administered with some porter.

22. He complained of some pain in the forearm; the line of demarcation more fully established; tongue clean; bowels open; pulse stronger. A poultice of beer-grounds was applied; the parts rapidly decomposing.

23. The arm, forearm, and hand, are in a most putrid state; the stench had caused him to complain of headach; the part above the line of demarcation more swollen, and somewhat œdematous. Amputation was now proposed to him, but he obstinately re-

fused to have the limb removed, and declared he would die with it on; in the evening, however, his priest made him consent.

Eight, P.M. The patient was seated on a chair; Mr. Walker having compressed the subclavian, made a circular incision just below the insertion of the deltoid through the skin and integuments. One set of muscles were then divided and retracted, and with another sweep the bone was exposed; the muscles were dissected off the bone for a short distance, and this was sawn through. A large quantity of serum escaped after the first incision from the congested cellular tissue. Scarcely any blood escaped during the operation, but the stump continued to bleed some little time after the principal arteries were secured, apparently from the veins. Water-dressing was applied to the stump.

On examining the limb the muscles and cellular tissue crackled under the fingers from emphysema; the annular ligament was extremely tense, and appeared sunken from the swelling of the hand below and the muscles above it. The nails and cuticle separated from the hand like a glove. On exposing the brachial artery, it was found to be completely pervious to within an inch of the elbow; from this point down to the wrist, it, together with the radial and ulnar arteries, was choked up by a coagulum of dark-coloured blood. From the obstruction, then, of the artery by this clot, it was that the hand was deprived of life. Mr. Walker observed after, "that the operation would have been performed earlier had the patient's health permitted, as the line between the sound and unhealthy structures had been fully established. But when we considered the state of his constitution, the feeble and unequal action of the heart, and the typhoid tongue, we deemed it requisite to give them support, and to restore the powers of the constitution before proceeding to the removal of the limb. It would not have done to leave the separation to nature, and to have assisted her by sawing through the bone, inasmuch as the time required for this purpose would have exhausted the already feeble strength of the patient. Taking all things into consideration, the age, strength, the shock of the operation, together with what he has already gone through, I am afraid the patient will not survive, still it would not have been right to have left the limb on."

24. He did not sleep well, although the limb felt very easy; pulse 90, of good strength; tongue moist, without any fur upon it; a slight hæmorrhage took place early in the morning. A bladder of ice was kept near the stump so as to preserve an atmosphere of cold.

25. Pulse soft and equable; tongue clean; bowels open; doing extremely well.

31. The stump has been regularly dressed, and is looking in excellent condition; the patient's health is improved, and there is every chance of his perfect recovery.

UNIVERSITY COLLEGE HOSPITAL.

WOUND OF THE BRACHIAL ARTERY IN VENESECTION.

M. W., late lieutenant R.N., admitted April 8, under the care of Mr. Quain (dresser, Mr. G. Camrey). It appears that about two hours ago, when going to the office with which he was connected, he was seized with a fit resembling apoplexy, and was taken to a surgeon, who states that he attempted to bleed him in the median cephalic vein, but failed, owing to its small size; and that while puncturing a vessel situated more internally, "the patient suddenly jerked his arm forward, and immediately a large gush of arterial blood flowed from the wound." A tourniquet was applied in the course of the brachial artery, and the patient brought to the hospital.

On admission the patient was stated to have lost about thirty ounces of blood, and when the tourniquet was slightly relaxed, a free gush of arterial blood took place, from a wound situated over the course of the brachial artery at the bend of the elbow. Mr. Quain determined on securing the bleeding vessel, by placing a ligature above and below the puncture. The patient being placed in a favourable position, and the arm supported on pillows, the tourniquet removed, and pressure made by the fingers of an assistant, while the venous blood was prevented from flowing by pressure on the forearm made with the hand of another assistant; the wound was enlarged to the extent of about two inches in the course of the vessel; and some coagulated blood being removed by means of a sponge and the handle of the scalpel, the tendinous expansion of the biceps muscle being brought into view, was divided to the same extent. The artery was now exposed, and an opening, occupying nearly half its circumference, was brought into view. Ligatures were then passed round, and secured one above, the other below the opening. The pressure being removed, all hæmorrhage had ceased. Lint, steeped in cold water, was then applied, and the patient placed in bed. He was almost insensible; pulse in the left forearm 60, and full; none in the right forearm; breathing slow, not stertorous; pupils much contracted; face drawn to the left side; right arm and leg partially paralysed.—Ordered to have six grains of calomel immediately, and a drop of croton oil every two hours until it operates.

Vespere.—Continues much the same; wound closed by strips of isinglass-plaster; and the arm surrounded with flannel.

9. Continues in nearly the same state; bowels have been freely opened; he frequently raises his left hand to his forehead. —Ordered ten leeches to the temples, and a blister to the nape of the neck. A feeble pulsation or thrilling can be felt in the radial artery of the right arm. He continued in nearly the same state until the 13th, when the report states him to be much worse. Pulse 130, small; constant rigors; feet cold. The discharge from the wound in the arm very offensive, and there is much ecchymosis around it. In the evening he became still weaker, and died.

Post-mortem. Head.—In the left ventricle of the brain was found a large quantity of dark coagulated blood; the substance of the brain around, including the thalamus opticus and corpus striatum, was softened and disorganised.

Chest.—The lungs were much congested, and easily broken down; the mucous membrane of the bronchi presenting distinct marks of inflammation. The summits of both lungs were marked by old and firm cicatrices; and a few miliary tubercles were scattered through them.

The Heart.—The viscera of the abdomen were healthy.

State of the Arteries of the Arm in which the Brachial had been Tied.—With the view of ascertaining with exactness by what branches the circulation had been restored to the forearm and hand, after the application of the ligature to the main vessel, common injection was forced into the end of the axillary artery, above the origin of the collateral branches which ramify about the elbow-joint.

On pursuing the examination, two ligatures were found on the brachial artery; one on each side of the wound, and the lower one at the distance of an inch and a half from the bifurcation of the vessel. The arteries above the situation of the ligatures, both the brachial and its branches, were much distended. Those below the ligatures, the end of the brachial, the radial, and the ulnar, though containing injection, were of less than the natural size, especially the last-named artery. This circumstance is doubtless owing to the difficulty of forcing a substance of considerable density through the small anastomosing branches.

The vessels by which the communication was established between the artery above the ligature to those below it were the following:—

In front of the joints the "anastomotica magna" joined the anterior ulnar recurrent by a long slender branch, and on the outer side the "superior profunda" and the radial recurrent were connected in the same way. The branch of communication in the latter case being on the ridge above the outer condyle of the humerus, and behind the attachment of the supinator longus. The branches in the situation of the musculo-spiral nerve were not seen to join.

On the posterior aspect of the limb the branches were of larger size, and they formed a network behind the joint. Behind the inner condyle of the humerus small branches of the "inferior profunda" running along the ulnar nerve, joined with equally small ones, derived from the posterior ulnar recurrent, the "anastomotica magna" crossed the lower end of the humerus, under the triceps muscle, and branching out largely, communicated freely with the superior profunda from above, and with the interosseous recurrent from below.

WOUND OF THE PALM.—SECONDARY HÆMORRHAGE.—LIGATURE OF THE BRACHIAL.

J. C., aged thirty-six, a strong, healthy, labouring man, was admitted June 15, under the care of Mr. Liston, on account of injury to the right hand, produced on the 13th instant, by the explosion of a powder-flask, which appeared to have forcibly torn asunder the palm of the hand. The hand was much scorched and blackened by the injury, the fleshy part of the ball of the thumb being deeply lacerated, and the thumb itself almost thrown upon the forearm. The pain was severe, affecting the whole hand and forearm. The bleeding was comparatively slight, and soon ceased altogether. The parts had been replaced by a surgeon, who attended until the patient was admitted into the hospital.

On his admission he was suffering from violent inflammation, which had already commenced in the injured parts. The whole hand, but more particularly over the outer and back part of the thumb, was much swollen, hot, and excessively painful. The inflammation extended along the wrist and lower part of the forearm. A deep laceration existed between the thumb and forefinger, which appeared to extend nearly down to the carpal end of the first metacarpal bone. The wound was blackened and sloughy, with a thin, bloody, and offensive discharge. A little behind this laceration another longer but more superficial one appeared, which extended from nearly the middle of the palm, round the root of the forefinger, to the dorsum of the hand. Patient's tongue dry and coated; bowels confined.

He was ordered to keep in bed, with the hand and forearm well elevated; water-dressing applied to the wound; the forearm frequently fomented. To have a dose of colocynth and calomel at bedtime, and an aperient draught to-morrow morning.

16. The hand much less painful; swelling and tension greatly reduced; less thirst and fever; bowels well opened.

17. Patient appears much easier.

19. Still doing well; wound discharges

abundantly; the sloughs are separating, and granulation has commenced; the thumb will now admit of closer approximation by bandage.

21. Wound much cleaner, though there are still some sloughs at the deeper parts to separate. A lotion of diluted chloride of soda to be applied to the wounds.

23. This evening the house-surgeon, Mr. Potter, was called down on account of hæmorrhage, which had been profuse, probably to the extent of sixteen or eighteen ounces; the patient was pale and faint. The bleeding, which had ceased on his arrival, was apparently arterial, and was described by the patient as coming out in jerks. A graduated compress was placed in the wound, and secured by bandages, applied over the fingers and hand, to as high as the middle of the forearm. The parts to be elevated, and cold water applied frequently to them.

25. No return of hæmorrhage; hand not at all painful.

27. The bandages were found slightly moistened with blood; hand rather painful, and throbbing.

In the evening the house-surgeon was again summoned to him, on account of great pain, which had come on suddenly, and was rather increasing. He described it as of a throbbing, bursting character, and causing the bandages to appear tight. On removing these and the compress no bleeding occurred, but an elastic, rounded, pulsating swelling was detected on the outer aspect of the hand, between the first and second metacarpal bones. There was no redness of the skin over the tumour, although the back of the hand appeared somewhat inflamed. The swelling was elastic and compressible, but on removing the pressure instantly regained its rounded form. Pulsation felt over a space of about one and a half or two inches square, and as evident on lateral pressure. On compressing the radial artery the swelling diminished considerably, and instant relief followed. It was evident that a diffused, false aneurism, of the termination of the radial artery, had occurred.

Mr. Liston having been sent for, arrived at about half-past eight in the evening, and immediately proceeded to put a ligature round the brachial artery, by making an incision over the inner edge of the biceps muscle, about three inches in length. This divided the skin and fascia: the biceps was then drawn to the outer side, and held by a retractor. The median nerve was thus exposed, and the cellular membrane over it having been divided, it was drawn to the inner side by a blunt hook. The vessel was then completely displayed, together with its venæ comites. The artery was now detached from the veins, and from its sheath by a few touches of the point of a scalpel, and a strong silk ligature passed round by an aneurism-needle. When this was tightened the pulsation in the tumour ceased altogether, and the pain was alleviated. The edges of the wound were brought together, and retained by two points of suture and isinglass plaster.

Mr. Liston observed, that this operation was performed on similar principles to those by which secondary hæmorrhage from stumps was arrested, viz., by tying the main artery of the limb, and thus lessening the flow of blood to the part. Experience had shown that it was not necessary in these cases to apply a ligature close above the bleeding point; and it was fortunate that such was the case, because in most instances it would be impossible to decide beforehand what vessel was bleeding, and the attempt to search for it in the middle of indurated tissues, or in cellular membrane gorged with coagulated blood, would be absurd. In the present case no one would attempt to find the bleeding point in the palm, because the tissues would be so much altered by inflammatory action and effused blood, and there would be a mere fistulous track leading to the vessel, which could not be drawn out nor secured. Ligature of the radial artery might succeed in some cases of secondary hæmorrhage from the palm, but it was always a very uncertain remedy, owing to the very free anastomosis of the ulnar artery; and in the present instance the pulsation in the tumour was only partly arrested by pressure on the radial. Ligature of the radial and ulnar arteries was unnecessarily severe, as it made it necessary to make two incisions instead of one, and that, too, without the insurance of perfect success; inasmuch as the interosseous artery would still supply the same quantity of blood. By applying a ligature round the humeral artery, the circulation through all the vessels of the forearm was lessened, and this experience had shown to be quite sufficient assistance to nature in remedying accidents like the present one.

Mr. Liston also remarked, that he looked on this as a point of considerable practical importance in wounds of the superficial palmar arch, &c. He believed in these cases that when the bleeding could not be commanded by methodically-applied pressure, it was much better to tie the brachial artery at once, than to apply a ligature to only one of the vessels of the forearm, with the chance of being obliged to tie the other in a day or two; and even, then, not being safe from future hæmorrhage.

29. No bleeding from the wound in the hand, which has resumed a healthy appearance: the tumour has entirely disappeared. The wound caused by the operation has united in the greater part of its extent. The sutures were removed, and warm-water dressing applied. The circulation in the arteries of the forearm is already restored,

the pulsations in the radial being perfectly natural.

July 5. The wound of the hand has made great progress; suppuration very copious. The incision in the upper arm was united by granulation, leaving a small fistulous opening for the ligature.

19. The ligature was pulled away this morning, having been firmly retained until now, probably, by the knot entangled in the granulations. The circle of thread which had embraced the vessel was so small as hardly to admit a pin's-point.

August 1. The wound in the hand being now firmly united, the patient was discharged.

EXTRACTION OF TEETH.

To the Editor of THE LANCET.

SIR:—I am sorry to trouble you once again on the subject of tooth-instruments; yet as the discussion stands at present on your excellent pages, it is, with your permission, fairly open to a few further remarks.

Mr. Drummond observes, in answer to my first letter to you, "As the claw (of the key) is attached to the shaft by a hinge-joint, when the shaft is made to revolve on the fulcrum, the claw must follow the shaft in a direct line (not necessarily direct) from its point to its hinge, which may be seen by applying the instrument to a piece of wax moulded into the form of a tooth and gum, when the point of the claw will move in the direction described."

Well, the point of the claw does move in a horizontal line till it meets and grasps the tooth, when, if the point of the claw and the centre of the fulcrum be placed horizontally opposite to each other, it can move in this line no longer, because the tooth is not "as soft as wax." The claw then becomes fixed and stationary on its hinge; that is, the fulcrum and claw, including the tooth, are then all of a piece, and move together as shown in engraving No. 2 of my first letter. But (now for Mr. Drummond's argument) if *the instrument to which I object* be used, and applied as in the engraving No. 3 (for it is not susceptible of much better application), a greater space than that occupied by the tooth then intervenes betwixt the point of the claw and the fulcrum, when the point first acts on the tooth, and, therefore, the point *continues* to move in the horizontal line described by Mr. D. *et ergo*, wrenches the tooth horizontally, as demonstrated in my first letter: thus Mr. D. has given me an opportunity of stating, in another form, what I there proved, and of showing the relative action and value of the two instruments in question; for in my instrument the claw of the key, when extracting the tooth, is stationary on the shaft; its hinge-joint acts only till it becomes fixed on the tooth, and, therefore, only previously to moving the tooth.

Mr. D. further states—"It may be laid down as a rule that the point of the claw should never be higher than its hinge." In my first letter I had laid it down as a rule that the key should never be used with the point of the claw higher than the centre of the fulcrum; for upon this principle alone depends the proper use of the key-instrument; and when used in the manner I have condemned, its action is crossed almost at a right angle with what it should be.

On the strength of these views of Mr. D.'s, which are plainly erroneous, Mr. Lintott has availed himself of the old saw, "doctors differ;" but sometimes, though not always, one of them *may* be in the right; and Mr. L. has palpably hit upon the wrong one.

Mr. L.'s description of what he conceives to be the mode of using the key, which he states to be an awkward business, requiring first a great deal of fingering and then a blind turn inwards, will show how far he can appreciate the mechanical properties of the instrument: for there is no fingering required; and if a blind turn inwards be made, I grant him it would prove an awkward business. As to the relative value of the forceps and key, I would recommend every man to act according to his experience, and by no means would I persuade any one to use the key who does not understand it. The object of my first letter with the engravings was to show the proper mode of using it; that of Mr. L.'s was to show it to be worse than useless. Nor is there any necessity for his calling in the aids of persuasive rhetoric in his pathetic appeal as to the purity and benevolence of his motives, since surely I am equally entitled to the same credit. In dereliction of his question as to the possibility of ascertaining the direction and shape of the fangs of a tooth beforehand, which I had answered with the anatomical rule, he refrains, with an assumed air of injured pride, from replying to that part of my letter (which, indeed, requires no reply), because he chooses to say it imputes to him ignorance of anatomy and want of skill.

Our individual arguments had heretofore been submitted to the reason of your readers and not to their feelings, upon which latter we have both, I trust, an equal claim.

I have in this letter given further proofs of the correctness of my first proposition, and can proceed no further without the aid of diagrams, which would not only require time for the engraving, but even then I find would be just as much open to the suspicion of invalidity as is the pons asinorum of Euclid. I remain, Sir, yours most respectfully,

ROBERT STEVENS.

Kennington Common, July 17, 1841.

THE LANCET.

London, Saturday, August 7, 1841.

Mesmerism is not yet quite extinct in France, and has been deemed by M. Gerdy worthy of another confutation. The time of the Academy of Medicine has been again wasted by a discussion on this absurd delusion. The mesmerists have pretended that their acolytes could *see* with the nape of the neck, the back, the navel; read through stone walls, boards, or bandages; and divine the contents of letters concealed in people's pockets. The somnambulists have sometimes condescended to tell what the antipodes were doing, and to reveal what was going on in the Moon. *Lucidity* is one of their vulgar attributes; and as it is unlike some of their other tricks, susceptible of being tested, M. Burdin offered a prize of 3000 francs to any mesmerist who should produce a somnambulist capable of reading with the eyes bandaged. The time fixed for the achievement of this feat was *three* years, which have recently expired; and to the great discomfiture of the crestfallen disciples of Mesmer, although all the celebrated professors of the art led adepts into the arena, not a single individual was found within the *three years* able to read, even through a thin sheet of paper. They have lost the prize; and have been driven in disgrace from Paris, to seek dupes in the credulous provinces and country towns of the kingdom.

It would, of course, be a mere coincidence, that this should be the precise time chosen for the *début* of a new French mesmerist in England. The Burdin prize has been lost; the exposure of the somnambulists has been made by M. Gerdy, and the whole fraternity was scouted in Paris a few weeks since.

We had *Baron* Dupotet in London a year or two ago. The *Baron* had acquired some *notoriety* in his own country; had written a volume on the subject; and performed some grand experiments, which were proved by *a brother mesmerist* to be fallacious, after many months of laborious investigation. A new disciple might have two very decided advantages over his predecessors. He might be entirely unknown in Paris. His name may have never figured in the French scientific journals. He may not be one of the recognised mesmeric "*célébrités*." Instead of appealing to the scientific, and speculating on the success of a book, he might, moreover, take the safer course, of submitting his pretensions at once to the judgment of the "fashionable world," and place considerable confidence in his personal appearance.

It is true that it might be more satisfactory if he would show that he had the slightest scientific pretensions; that he had ever acquired a shadow of reputation in his own country; and that he was not, like some *roués* of the Palais *Royale*, and provincial charlatans, on an amusing excursion, undertaking to gull the English. But never mind these.

We make these observations in justice to the French nation, to whom medicine, as well as the other sciences, has been indebted for so many valuable discoveries. Every time mesmerism has been examined it has been repudiated by the scientific academies of France. Although a mesmerist might prove that he had exhibited his tricks in France, he might not prove that he had ever deceived either a French commission or a single man of science. The *Courier de l'Europe*, a weekly paper, published in London, and conducted with great talent, speaks of one mesmerist with a reserve which the English journals would do well to imitate. The Editor, we may remark, would do both countries good service, if he would unmask adventurers, who give the English public very erroneous opinions of the French people. As the laws of the two countries, unfortunately, permit a free trade in mountebanks, while they prohibit the interchange of nearly all useful commodities, a check of this kind is the more necessary. Princes *travel incognito*; another class of great personages, like some mesmerists, preserve a strict *incognito at home*, and only shine into celebrity abroad. A simple *particulier* in

the Rue de la Harpe, or a Parisian dandy, for example, may be a count, with the prefixed *De*, in London, a Lion, and a *savant* to boot, creating more noise in the newspapers than the most distinguished scientific men that France ever produced. A French paper may tell the English public what these men are *not*.

M. FRAPPART, who made some noise in Paris, unluckily challenged M. GERDY to be a witness of his pupil's performances. Mademoiselle PIGEAIRE *played at cards and read* with her eyes bandaged: the eyes were covered with a cotton bandage, a pad of cotton-wool, and a band of black velvet, fixed to the skin with strips of court-plaster. When somnambulism was induced, the young lady complained of uneasiness and pain in the head; raised and depressed her eyebrows violently; struck her head with her hands; and led GERDY to suppose that the bandages were displaced before vision was effected, particularly as she always appeared to direct her eyes towards the object, and saw only when her head was turned in a particular direction.

Under these circumstances FRAPPART, who had grossly flattered and then grossly abused M. BAILLY, the president of the Academy of Medicine, addressed a letter to M. GERDY, inviting him to witness three facts, the first of which *never* failed. The letter is characteristic of the mesmerists; it begins in the following strain:—*Monsieur, vous le savez, generalement en ce monde, il y a cent bêtes pour un homme d'esprit, et cent hommes d'esprit pour un homme de cœur.* He was in search of such sincere men, and had been informed he should find one in M. GERDY; if so, M. GERDY would consent to see, and to *certify* what he saw; he expected this from the *magnanimity* of his character, and requested in reply, a *oui nettement exprimé*, or a *non bien positif*. M. GERDY actually replied to this epistle, and consented with his medical friends to have the experiments performed at his own residence. CALLYSTE (the patient) was *mesmerised*, and M. GERDY applied the bandage, which was speedily displaced by the contractions of the muscles of the eyebrows and face; M. GERDY replaced it, and CALLYSTE displaced it several times; until at last the somnambulist, in his *deep* sleep, said he should never see if he were disturbed every instant. He attempted to play at cards; failed; and tore off the bandage in an ill humour.

M. FRAPPART requested a second trial, and hoped M. GERDY would name another place for the meeting; he feared that the experiment would fail from the excitement CALLYSTE might experience, where the former experiments had *failed*; he entreated M. GERDY *not to interfere*—not to tie the *bandage too tight*—nor to touch it after it had been once fixed. M. GERDY and his friends refused to be present on such terms; imperfect, unsatisfactory experiments could only amuse the idle curiosity of the public. CALLYSTE was led again, with his eyes bandaged, and in a state of assumed somnambulism, to M. GERDY's residence; he removed the bandage by the ordinary grimaces, and M. GERDY replaced it with equal obstinacy; until CALLYSTE flew at last into a passion and left the house, declaring that it was impossible to see as the bandage was every moment interfered with: a truth too evident to be disputed.

In March last FRAPPART again addressed M. GERDY. In his letter he said, "Last "year I was beaten; the experiments failed "twice in succession: you accepted my pro- "posals then; I repeat them now, as I have, "or believe I have, a phenomenon to exhibit. "Shall I be more successful? I know not. "If you will devote forty minutes to the exa- "mination, one of us will be a gainer; *I shall* "*be undeceived, or you will be shaken* (*je serai* "*détrompé ou vous serez ébranlé*)." Your mesmerists have the true Napoleonian style —*notæque per oppida buccæ*.

Mademoiselle PRUDENCE was the performer. The efforts to deceive were equally palpable.

Numerous correspondents have asked why we have not attended and *exposed* the new imposture which is said to be now exhibiting

in great force at the Hanover-square Rooms,—the tricks of "mesmerism" again constituting the order of the day. The answer which we have to make will be amply sufficient for all rational minds. The fraud of "mesmerism" has already been most fully, thoroughly, and completely detected by the Editor of this Journal, in the presence of most respectable witnesses, and an account of the exposure of the fraud was published at the time in the columns of THE LANCET. It can hardly be expected that every new trick, performed by every additional conjuror, should be made the medium of notice and comment. If there be any fools who delight in the tricks of professors of the mesmeric art, and who really believe that the results of certain gazings and manipulations are *not* tricks, we can only say that we have no desire to interfere with the enjoyments of such persons. At the same time we feel it to be a duty to society to republish the statement which appeared in THE LANCET, in August, 1838; and we may suggest to Monsieur DELAFONTAINE, that as Baron DUPOTET, the profitable exhibitor in 1838, left the metropolis immediately after he had been subjected to the disgrace and mortification of witnessing the detection of the frauds of mesmerism in Bedford-square, M. DELAFONTAINE had better make preparations for feeding the credulity of a certain portion of the English public by some artifice or project. *Mesmerism* has had its day. The number of persons remaining to be gulled, and still willing to be duped, is but small. We would suggest to Monsieur DELAFONTAINE the policy of engaging the WINDSOR GHOST for the remainder of the season. If he could get hold of such a performer, it would without doubt prove a very profitable speculation.

EXPERIMENTS

PERFORMED ON

ELIZABETH AND JANE O'KEY,

AT THE HOUSE OF

MR. WAKLEY, BEDFORD-SQUARE,

In August, 1838.

At the wish of several professional gentlemen who had witnessed many of the experiments which had from time to time been performed on Elizabeth and Jane O'Key by Dr. Elliotson, with a view to prove the influence of mesmerism on the human frame, an appointment was made for the attendance of the girls at the house of Mr. Wakley, in Bedford-square, on an early day in the month of August, when Dr. Elliotson exhibited several of the results which he considered to arise from magnetic manipulations and processes. On this occasion the experiments were conducted wholly by Dr. Elliotson, and regarded by Mr. Wakley not as tests of the reality of the phenomena displayed, but as demonstrations of the supposed discoveries and the real opinions of the doctor. Accordingly, a fresh appointment was made for Thursday, August 9th, when the experiments were again commenced and conducted by Dr. Elliotson, and a second time rejected by Mr. Wakley as evidence of the correctness of the views entertained by the advocates of mesmerism.

After some days had elapsed, Dr. Elliotson addressed a note to Mr. Wakley, saying that he would send the girls again to the house of Mr. W., at three o'clock on Thursday, the 16th of August. Dr. Elliotson's note not reaching Mr. Wakley until twelve o'clock on that day, Mr. W. had not invited any persons to witness the experiments, but Dr. Elliotson had asked Baron Dupotet, Dr. Richardson, Mr. Herring, and Mr. Clarke, to be present, and those gentlemen, with Mr. Wakley and Mr. G. Mills (who had drawn up the accounts of the various experiments performed by Dr. Elliotson at University College Hospital, which had appeared in this Journal), formed the spectators on this occasion.

Experiments on Elizabeth O'Key.

After some of the often-repeated experiments had been performed by Dr. Elliotson, with various results, it was proposed by the doctor that the metal, *nickel*, should be used, the effects of which he said had been found by him to be, and would now prove to be, quite astounding. A piece of nickel was produced by the doctor, of about three quarters of an ounce in weight, and of an oval form, and also a piece of lead, of nearly the same shape and smoothness, but somewhat larger. Elizabeth O'Key was then seated in a chair, being, as was stated, in the "ecstatic delirium." A piece of thick pasteboard was placed in front of her face, and held in that situation by two of the spectators. By this contrivance it was rendered impossible that she could see what was passing either below or in front of her. Mr. Wakley being seated directly opposite to the girl, and at a short distance from her, received the lead and nickel from Dr. Elliotson, in order that he might rub the two on her hands in such a manner that from merely

touching the substance, or from its form, it would be impossible for her to decide which of the two was being used. Dr. Elliotson had, as has been stated, previously described the effect of the magnetic nickel to be of a most extraordinary character, and said at the same time, with much earnestness, that the lead might always be applied with impunity, as no magnetic effect ever resulted from the application of that metal to the skin.

The substances were then applied to the hands of the girl. First the lead was applied to each hand, alternately, but in a manner which might have led the girl to believe that both metals were used. No effect whatever resulted from these applications. After the expiration of a considerable period, the nickel was employed, having been received from Dr. Elliotson, who for some time had held it in his hand, in order to charge it strongly with the magnetic influence. By this proceeding the metal was necessarily heated to the temperature of the skin. Mr. Wakley had previously thought it right to hold the *lead* in *his* hand, and heat it in a similar manner. In consequence of this obviously necessary precaution, no indication was offered to the mind of the girl by which it could be guided, during the experiment, by the mere *temperature* of the substances which were employed.

The nickel was now used, precisely as the lead had been applied. There was a pause. The expected results did not appear. After, probably, a minute had elapsed, the lead was again used; and then again; and after the last application of the nickel, the lead having been repeatedly employed during the interval, the face of the patient became violently flushed, the eyes were convulsed into a startling squint, she fell back in the chair, her breathing was hurried, her limbs were rigid, and her back and abdomen assumed the position which are produced in an attack of opisthotonos. In this state she remained during nearly a quarter of an hour. Certainly that time elapsed before the condition of the patient appeared to warrant a repetition of the experiment. A short conversation then ensued between Dr. Elliotson and Mr. Wakley, as to the cause and reality of the symptoms. The doctor contended that the effects clearly resulted from the application of the magnetised nickel, but that they had not come on with their usual rapidity. Mr. Wakley expressed a contrary opinion, and wanted to know of what value the experiments could be if there were nothing like *certainty* in the results, and if the effects were to be attributed to one metal so long after another had been employed, as on that occasion. Ultimately it was determined that another experiment should be tried with the nickel, Dr. Elliotson suggesting that that metal, in its magnetised state, should alone be employed.

Mr. Wakley was now again the operator, and before the experiment was tried he stated privately to Mr. Clarke, that instead of using nickel only, he would not on this occasion employ any nickel, and desired Mr. Clarke to take notice of the fact, that he would put aside the nickel, unperceived by any other person, the moment that it should be handed to him by Dr. Elliotson, and before either of his (Mr. W.'s) hands should be allowed to come in contact with those of the patient. The experiment was then again performed. Mr. Wakley had taken the nickel from Dr. Elliotson, and put it on one side, when it was taken, unseen by any other person, by Mr. Clarke, who placed it in his waistcoat-pocket, and walked with it to the window, there remaining during the performance of the experiment. Mr. Wakley employed both hands, but his fingers were so held that it was impossible for any person excepting the operator to know *what* he was holding. Presently, on applying the substance which he held in his left hand to the right hand of the patient, the pasteboard being again held before the eyes of the girl, Mr. Herring, who was standing near, said, with much sincerity of feeling, in a whisper, but loud enough to be heard at a short distance, "Take care; don't apply the nickel too strongly." Scarcely had these words escaped from his lips, when the face of the girl again became violently red; her eyes were fixed with an intense squint; she fell back in the chair; a more evident distortion of the body ensued than in the previous paroxysm; the contractions of the voluntary muscles were more strongly marked, producing a striking rigidity of the frame and limbs, and the shoulders were thrown back to the utmost, the spine displaying as complete a bow as in an attack of opisthotonos. In a word, the severity of all the symptoms appeared to have undergone marked increase. Dr. Elliotson again observed, that "no metal other than *nickel* had ever produced these effects; that they were most extraordinary:" in fact, that "they presented a beautiful series of phenomena." This paroxysm lasted during upwards of half an hour, and was admitted by all who were present to be much more violent than the one which had preceded it.

Mr. Wakley now suggested that the girl should retire into an adjoining room, where her sister was waiting, as he was anxious to make a statement to Dr. Elliotson in her absence. The girl objected to depart, and therefore her sister was called from the adjoining room, and the gentlemen retired into that room. Mr. Wakley then said to Dr. Elliotson, "that he felt it to be his duty to state that the doctor was entirely deceived respecting the character of the experiments and the cause of the symptoms. That all present had been witnesses of the violent

effects which appeared to result from the application of the nickel to the hand, and had heard Dr. Elliotson state that such extraordinary symptoms could be produced by no other magnetised metal, whereas he had *not used* NICKEL *on that occasion*. He had *not even approached her with it*; but that on the instant that it was handed to him by Dr. Elliotson he had put it aside, unobserved, and had merely rubbed upon the skin of the girl a piece of lead and a farthing, which he had respectively held in either hand, but that the metals were so held that he was certain that no person could discover what he was applying."

Dr. Elliotson replied, that "he saw the nickel used; that Mr. W. must have touched her with that metal without knowing it himself; that he was certain of the fact, and that he was positive that the effect could be produced in no other way."

Mr. Wakley then said that there was a gentleman present who could confirm the accuracy of his statement,—a witness, in fact, who had the nickel at that moment in his pocket, and had stood with it at the window during the whole of the time that he was applying the lead and the farthing to the hands of the girl.

Dr. Elliotson again declared that this was impossible, when Mr. Clarke produced from his pocket the piece of nickel, and said that it had really been there during the whole of the experiment, and that it had not been near the girl during the entire trial.

After a somewhat lengthened conversation, Dr. Elliotson suggested that the experiment with the nickel should be tried once more. This proposition was consented to; and during the performance of the experiment Dr. Elliotson remained in the other room, while Mr. Wakley, Mr. Herring, and Mr. Clarke went to the patient to renew the operation. Again was the nickel handed privately to Mr. Clarke, and the lead and farthing were applied as before, with the pasteboard held in front of the patient's face. In three or four minutes there was a reappearance of the flushed countenance, the staring eyes, the rigid limbs, the bent back, and the distorted frame, although *no nickel had been used*.—nothing, in short, but the lead and the farthing.

A report of these results was conveyed to Dr. Elliotson and the gentlemen who had remained with him, when Dr. Elliotson said that the occurrence was most extraordinary; that he could not at that moment account for it; and that he had no doubt that an explanation could soon be found which would remove all appearance of anomaly in the results. He would, he said, again suggest that the nickel should be re-employed; and as this request was so urgently made, Mr. Herring, Mr. Wakley, and Mr. Clarke again visited O'Key, for the purpose of proceeding with the trial, but, *instead of using the nickel*, the lead and farthing were *again* employed, with the *same results as before*. There was another fit. Afterwards, when the girl had recovered from the apparent paroxysm, Mr. Wakley suggested that the magnetised nickel should be rubbed over both hands freely, on the skin, in different places, but not exactly in the manner in which the lead and farthing had been employed. *No effect was produced by this application of the nickel.*

On hearing a further report of the effects which appeared to arise from the use of the lead and the farthing, and the *absence* of effects when the nickel was really used, after the other experiments had been concluded, Dr. Elliotson candidly admitted that he "could not explain how the thing had occurred; it was most extraordinary, but still he had not the slightest doubt that the whole would yet admit of a satisfactory explanation."

Mr. Wakley, on the other hand, contended that what had been done was, in his opinion, perfectly conclusive with reference to the character of the supposed phenomena, and that he did not consider that a single additional experiment could ever be necessary in connection with such an inquiry.

Afterwards it was proposed by Dr. Elliotson that the nickel should be again tried on the next morning.

Accordingly at nine o'clock, A. M., on August 17, the girls arrived, when Mr. Wood also attended, and, at the earnest request of Dr. Elliotson, the experiment with the nickel was renewed, the doctor stating that he had no doubt that the apparent contradictions which had been exhibited on the previous evening arose from the circumstance that the *lead*, in the *three last experiments*, had been rubbed on *that portion of the skin where the nickel had been applied in the first experiment*, and that thus the effects which were exhibited arose, in reality, not from the mesmeric influence of the lead, or the farthing, but from the mesmerised *nickel*. Mr. Wakley said that *he* believed that O'Key could herself give a better explanation of the nature of the supposed phenomena than any other person.

The experiments were now again renewed, Mr. Wakley stating, however, that he could take no interest in them after the exposition of the previous evening. The piece of pasteboard being held before the girl's face, instead of applying the *nickel* Mr. Wakley used the *lead*. The patient repeatedly fell back in the chair, during these operations, in what has been called the "mesmeric sleep." This apparent sleep was produced so repeatedly from the use of the lead, that Dr. Elliotson said he must admit that he had been deceived in supposing that *lead* could not convey the magnetic influence.

After a considerable time had elapsed the

nickel was applied to her hand in the same way as the lead had been, both metals being of the same temperature. Apparent sleep was still the product, *without convulsions or rigidity*. At length Dr. Elliotson proposed that the nickel should be applied to the inside of *the lips*. The two metals were, therefore, thus used. *First* the lead, *then* the nickel; but the *lead* by far the more frequently. Presently all the effects which were represented as being the results of the application of the nickel were apparent, and the patient appeared to be thrown into as violent a paroxysm as she had exhibited during the trials of the previous evening. Dr. Elliotson, in the performance of these experiments, complained "that the lead had been applied *too soon* after the nickel,—that *time* had not been given for the latter to operate,—and that it was not fair to use the lead so much more frequently than the nickel, but that the same chance should be given to the latter as to the former."

Mr. Wakley replied, that in testing the truth and accuracy of the alleged phenomena, any person would be justified in using *the lead* throughout the entire day, and not employing *the nickel* at all, especially since it had been contended that when the nickel was once used, frictions on the same parts, at subsequent periods, of remote dates, with *any other metal*, would produce the results which were attributed to nickel alone.

At this stage of the proceedings Mr. Wakley was obliged to leave the room to see a person on business, and before he could return Dr. Elliotson, who was pressed for time, left, with Mr. Wood. The doctor took with him the nickel and lead, not knowing, probably, that it was intended to use them again. When Mr. Wakley returned, after an absence of about half an hour, he suggested that, although Dr. Elliotson and Mr. Wood had left, it might be well, for the purpose of presenting a brief report to the profession on the subject, to repeat, with all the necessary precautions against imposition, some of the experiments which had been so often reported in THE LANCET, made with mesmerised water, gold, &c. He then sent to Mr. Garden's for a lump of nickel, and had a musket-ball beaten into the shape of the piece of nickel which had been used in the previous experiments. There were now present, besides Mr. Wakley, who conducted the experiments, Mr. Farr, Dr. P. Hennis Green, Mr. George Mills, and Mr. Clarke. Subsequently Mr. Hale Thomson and Mr. B. Tipper joined the party.

Jane O'Key.

It was arranged that the experiments should commence, on this occasion, with Jane O'Key, her sister being at the time labouring under the exhaustion of the apparent fit which had followed the use of the metals, and very few observations having as yet been made on Jane. Both sisters were kept in the adjoining room while the experiments were arranged, and thence brought in as soon as the preparations were severally completed. The new investigation occupied about five hours, and consisted of the following series of experiments:—

Experiment 1.—Six wineglasses, nearly filled with tepid water, had, a considerable time previously, been placed on a table at a distance from each other at the end of the room, no person having been allowed to touch or go near them. The whole were unmesmerised. Jane O'Key being then called in, was requested to drink from each of them, successively, every person but herself keeping away from the table and the glasses. She complied.

No effect was produced, and she was then requested to retire.

Experiment 2.—The same six glasses, the water in the *fourth* having been strongly mesmerised, that is, according to the opinion of the believers in the doctrine, she was again called in, and partook of the water in the whole of the glasses.

No effect was produced.

Experiment 3.—The same six glasses remained on the table. On this occasion the *fourth* glass, which had previously been mesmerised, was placed in the position of the first on the table, and was again mesmerised, the first being carefully shifted to the place of the fourth. All the others remained in their previous positions, and were untouched. She was again introduced, and drank from each.

No effect was produced from either, and she withdrew.

Experiment 4.—The six glasses remained on the table, untouched and unapproached by any one. After a few minutes had elapsed she was again called in, and drank of the water in each.

No effect was produced, and she withdrew.

Experiment 5.—On this occasion the mode of proceeding was changed. The water was now *strongly mesmerised in the whole of the six glasses*. She partook of the whole.

Not the slightest effect was produced, and she withdrew.

Experiment 6.—Six glasses were again used, containing fresh water. None of them were mesmerised. She was again called in, and drank from the whole of them.

No effect was produced, and she retired.

Experiment 7.—Six glasses were again used. *All six were strongly mesmerised* by Dr. Green and Mr. Farr, who for a considerable time kept three fingers of each hand in the water of every glass. She came in and drank every drop from each glass.

No effect whatever was produced, and she withdrew.

It was now considered by Mr. Wakley that nothing could be more conclusive in refutation of the supposed influence of what has been denominated *mesmerised water*, on Jane O'Key, than the foregoing experiments, and that it was quite useless to pursue them any farther. This opinion was shared by every person present.* The investigation was then directed to the alleged influence of gold.

Experiment 8.—Five unmesmerised sovereigns had long been placed at some distance from each other on the table. One of them had been warmed in water at a temperature of 80 degrees, care being taken not to touch it with the fingers. Jane O'Key was now again called in, and directed to take each up separately. This she did.

No effect was produced, and she retired.

Experiment 9.—The whole five sovereigns being suffered still to remain *unmesmerised* she was recalled, and desired to take them all up, one after the other, retaining each in her hand until she had taken up the whole. She did so.

When she had seized the whole of them, in this manner, her hand appeared to be *spasmodically fixed*. This effect having been produced by *unmesmerised* sovereigns, it was thought right to reverse the proceeding, and mesmerise the whole of the sovereigns on the next trial.

Experiment 10.—The five sovereigns were all *mesmerised* under the influence of all the gentlemen present, by the formation of a "mesmeric battery." Jane O'Key was then again introduced, and took them up, and squeezed them, one after the other.

No effect was produced, and she retired.

Experiment 11.—The five sovereigns were again *all strongly mesmerised*. She was called in again, and desired to take them up and squeeze them. She did so.

No effect was produced, and she retired.

Experiment 12.—A sovereign, from another table, which had not been touched by the hand for a considerable time, and was completely *unmesmerised*, was now pushed on the floor, and slightly warmed by placing over it a jug which contained hot water. It should be stated here, in explanation of this experiment, that Jane O'Key, when desired by Dr. Elliotson to pick up a mesmerised sovereign from the ground, has almost invariably become "fixed," as she picked it up, time after time, in a gradation of attitudes, until the supposed influence of the magnetism was alleged to have died away. In the experiment now before us the sovereign had been slightly and guardedly *warmed*, and she was requested to take it up.

She did so, and walked away with it, when her hand became *fixed*, as the spectators watched for an effect, and the arm turned upwards behind her back, with the clenched fist placed between the shoulders. In this state she walked about the room, and on being asked what had become of her hand, she said that she did not know. After the hand was loosened she was requested to retire.

Experiment 13.—A sovereign which had long been untouched was knocked from the table with a stick, on to the floor, *thoroughly unmesmerised*. She was again called in, and requested to pick it up. She did so.

She was immediately *fixed*, while her hand was a few inches above the floor. On letting the metal drop she was again requested to raise it, and, on complying, a second time became *fixed*, with her hand a few inches higher from the floor. Having again let it fall, she was requested to pick it up a third time. She did so, and, for a third time, became *fixed* by the *unmesmerised* sovereign.

After this exhibition, and those which had preceded it, Mr. Wakley considered that it was quite unnecessary to perform another experiment with gold. Every person present concurred in opinion with him.

Experiment 14.—The girl was placed on a chair, and the pasteboard was held before her face. Mr. Wakley then took two flattened bullets, one in each hand, and rubbed them alternately on each hand of the same patient, Jane O'Key, six or seven times.

No effect was produced.

Experiment 15.—The eyes were then carefully covered with a thick bandage of silk, and the lead was rubbed several times along the inside of both lips.

No effect was produced.

Experiment 16.—A piece of *mesmerised nickel* was now applied to the insides of both lips.

No effect was produced.

Experiments 17, 18, 19.—This experiment was *repeated* three times more with the *same result*.

Experiments 20, 21, 22.—The *magnetised nickel* was now rubbed freely along the backs and the palms of the hands, unseen by the patient, *three* times, with the *same result*.

It was now agreed by all the gentlemen present, that it would be useless, and even ridiculous, to subject the alleged magnetic powers of Jane O'Key to a single additional test. The analysis was complete, and the conclusions were self-evident.

Elizabeth O'Key.

Experiment 23.—Six glasses of water were

* It should here be stated that Jane O'Key, at this time, appeared to be highly sensible to manipulations made in her view. She was repeatedly, during the day, fixed, or sent to sleep, by passes made before her, by pressure on the palms, by the touch of a "mesmerised" gold watch, and by pointing to her face.

placed on the table, with all the precautions that were used in the case of Jane O'Key. Not a single glass was now mesmerised. Elizabeth O'Key was now called in, and requested to drink from each glass. She did so.

She became *fixed* on restoring the *fourth* glass to the table. She then retired.

Experiment 24.—The same water and glasses were allowed to remain, but the *fourth* glass, which had just stupified her, was removed to the place of the second, and the second to the place of the fourth. She was again called in, and drank from the whole of the six glasses.

No effect was produced by either glass, and she again retired.

Experiment 25.—The same six glasses remaining as in the last experiment, the patient was again called in, the whole of the water being unmesmerised. She drank from each.

No effect was produced, and she retired.

Experiment 26.—The glasses and water again remained exactly in the *same state* as in the last experiment. No person had approached or touched either of them during the girl's absence from the room. She was again called in.

On drinking from the *fifth* glass she became fixed for a few seconds, with her finger touching her forehead. On recovering from this state she retired.

Experiment 27.—The *same* six glasses, and the *same* water *unmesmerised*, as in the last experiment, were again used. No one had approached them. It was, however, agreed that Mr. Wakley and Dr. Green should stand, for a few seconds, near to the corner of the table on which the third and fourth glasses were placed, and then hastily quit that spot, so that on her coming into the room she might see them leave it.

On drinking from the *third* unmesmerised glass, she apparently became firmly fixed, with the glass in her hand, and after a few seconds fell backwards, as if dead, on the floor.

Experiment 28.—The same six glasses were again employed, with *unmesmerised* water, and she was again called in, and drank from them all.

No effect was produced, and she retired.

Experiment 29.—Fresh water, at a temperature of 80 degrees, was now put into the six glasses, and the water in all the six was strongly "mesmerised" by fingers long held in the glasses, and by breathing on the water. She was again immediately called in, and voluntarily drank nearly the whole of the water, leaving only about an ounce in the last glass.

She was neither "fixed," nor "stupified," nor sent to "sleep" by the act, but on reaching the *fifth* glass she complained of sickness, by no means an improbable result, considering that, in this experiment alone, she had swallowed altogether hardly less than a pint of warm water.

No other experiment with "mesmerised" water was required after this. Six glasses of water, which had been strongly impregnated with the subtle and marvellous "magnetic" fluid, had produced no effect on the patient, while in two other instances, mere sippings of the *unmesmerised* drink appeared to produce stupefaction, sleep, rigidity, and, ultimately, in one case, prostration on the floor and snoring.

The girls had now been under experiment from nearly nine in the morning until ten in the evening, and as Elizabeth O'Key was evidently suffering from a sensation of sickness, and as there did not exist amongst the spectators two opinions as to the character and causes of the symptoms which had been observed, the experiments ceased, and the girls left Bedford-square for the hospital. After the girls had departed, Mr. Wakley made a few remarks on what had been witnessed, and declared that, in his opinion, the effects which were said to arise from what had been denominated "animal magnetism," constituted one of the completest delusions that the human mind ever entertained.

The accuracy of the description of the experiments herein recorded, has been affirmed by all the gentlemen present, three of whom, Mr. George Mills, Dr. Green, and Mr. Farr, took notes of them at the time of their performance, and from whose notes the above report has been prepared by two of them.

On the Application of the Collegiate System to the Medical Schools of the Metropolis. A Letter to Sir B. C. Brodie, Bart. By the Rev. J. H. North, M.A., Chaplain to St. George's Hospital. Churchill and Hatchard.

The object of the author in the brief letter before us, is no less than an endeavour to elevate the character and position of the medical profession, by providing for the comforts and moral protection of the medical student, during his education in the medical schools. For this end he indicates a plan by which the personal convenience of the student would be carefully secured, while his habits and the disposition of his time would be regulated by certain salutary rules and observances, calculated to be of the highest service to him in the prosecution of his studies, and in establishing a habit of regular attendance to his duties. Nothing would give us greater pleasure than to see the author succeed in his benevolent purpose, and we promise him our warmest

support in carrying it into effect. The letter is addressed to one of the most active, as well as one of the most influential of a body from whom the proposal should have emanated; it is to be hoped that the letter will be handed to his fellow-councillors by that gentleman, and that the college will open its drowsy lids that would seem to be shut for ever upon the good of the profession. The letter before us reflects the highest honour upon its writer; and we feel assured that he will receive the heartfelt thanks of all who peruse it, even should he not succeed in its execution; but we are far from despairing of such a result, when we perceive that those unconnected with our profession take an interest in our welfare. Of the position of the medical student upon the first entrance upon his studies in London, as contrasted with the college freshman, the author thus speaks:—

"The points, then, which come immediately within my present scope, are the comfort and the discipline of medical students; a very large class of the youth of England, upon the character of whom must depend in no small degree the comfort of the whole community.

"The life of a medical student may perhaps be well described by the word desultory. Supposing him to have left home, probably in some remote part of the country, and to have come to London solely for the purpose of professional study, not having any relatives or near connections in the metropolis, we can hardly conceive any one in a position less comfortable, or more exposed to temptation. With few exceptions, the age at which he comes to London is, I believe, nearly the same as that of a freshman going up to one of our universities. But what a striking difference there is in the provision made for the comfort and discipline of the young student in the two cases! I will briefly exhibit the contrast. As soon as a man goes up to Cambridge (I speak of Cambridge as having more certain knowledge of the system there pursued), he is required to present himself before his tutor, whose authority over his pupil extends not only to his studies, but to the regulation of his hours, and nearly all the matters affecting his domestic arrangements. It is upon the point of comfort that I am particularly speaking now. Rooms are provided either within the walls of the college, or in some house licensed for the purpose by the university, the proprietor of which is strictly answerable for his conformity to the regulations which the college issues. Dinner is provided in the hall, at which the presence of the under-graduates is not only expected but enforced; and for the other meals, commons are dispensed in stated quantities, and at fixed prices. The bills for necessary articles incurred with the tradesmen of the town pass through the hands of the tutor, who, at the request of parents or guardians, may thus have a vigilant eye upon the expenses of those committed to his care. The rules respecting rooms, commons, furniture, and other matters of this kind, are sufficient to ensure the comfort of all who are disposed to avail themselves of the help which is thus afforded them. That these rules may be evaded, that in some particular instances they fail of producing all the comfort expected, these exceptions, and such as these, do not constitute any argument against the system. My assertion is this, that for a young man going up to the university, circumstances are created favourable to his comfort. The medical student has none of these advantages. There is no officer connected with the hospital at which the pupil is entered, whose province it is to guide him in the selection of his apartments; there are no limits within which his choice is confined; there is no warrant for the respectability of the persons at whose house he may take up his abode; there is no provision made for the regularity of his meals, nor for any of those arrangements upon which his comfort depends. He has to settle and arrange for himself all those household affairs, which present no slight difficulty to those who are far older and more experienced than himself. He is alone; and solitude in London is of all things the most desolate. In these circumstances, he applies for guidance to those who, not unfrequently, are least able to render him effectual aid; he is at least as likely to fall into bad hands as into good: it may be, a notice stuck up in the hall of the hospital catches his eye, and he takes refuge from his perplexity in the first lodging-house that presents itself; and in this situation, unfriendly to his moral character, unfavourable to study, not admitting any superintendence, and destitute of all domestic comfort, he passes the first months, perhaps, which in the whole of his life have been spent out of the society of his family or friends.

"If from this view of the condition of the medical students we turn to a somewhat different one; if, from speaking of their comfort, we come now to speak of their discipline, the case becomes far stronger, and one which yet more powerfully calls for some improvement. I will again recur to the situation of under-graduates in support of this part of my argument. To speak briefly, the means insisted upon to secure regularity of conduct are these: daily attendance at chapel, again at lectures, a third time at hall; and lastly, the system of gates, by which a return of every under-graduate who is out after ten o'clock at night is daily made to the tutor or dean. The

punishments for offences against these laws consist of impositions and deprivation of liberty for periods varying in length, and eventually loss of terms and consequent postponement of the degree. I am not aware that the discipline of our universities has ever been considered too severe; nor do the tutors and deans find that they have too much power for the purpose of maintaining due attention to the necessary points of correct behaviour. Yet of all these restraints—these wholesome and necessary restraints—the life of a medical student is wholly devoid. There is, indeed, some attendance required on lectures, some in the wards of the hospital; but, with this exception, the pupil is entirely his own master; that is, in all matters relating to his hours, his expenses, his companions, his religious and moral habits, he is utterly without a check; and in all the heat and inexperience of youth, he finds all London before him for the uncontrolled gratification of his favourite desires, whatever they may chance to be."

The plan which the author suggests as a means of carrying out his views is thus expressed:—

"The remedy which I propose, then, for the evil which I have imperfectly described, and the existence of which is, I believe, fully admitted by those most competent to form a correct judgment, is simply an application, so far as may be found practicable, of the collegiate system to the great medical schools of the metropolis. I cannot conceive upon what grounds exception can be taken to such an application. It is a measure which would be attended with no expense; for the method of introducing it might be so contrived as gradually to extend the experiment in a manner proportionate to its success. A suitable building, or range of buildings, may be purchased, rented, or erected, as the convenience of the neighbourhood may admit; and here apartments may be allotted by some duly-constituted authority at a moderate rent previously fixed. This will, in all probability, not be higher than the rate at which furnished apartments are let, especially at the west end of the town; no additional burden, therefore, will be laid upon the students, while the expense incurred by building or hiring the college (for why should I not use the word?) will be reimbursed by the rents thus received. If this difficulty be once surmounted, and a suitable building be provided, all the points of internal discipline will easily be arranged; they are matters of detail, which a little patient consideration will speedily settle. In whose hands the general superintendence is to be placed, how far it may be advisable to have a common hall, and to require the presence of the pupils at dinner, what hours are to be observed, and under what penalties; these and the like questions will, I think, present no serious difficulty, if it be once decided that the general outline of the plan is to be adopted, and if the execution of it be committed to those in whose judgment and experience confidence may be reposed."

CHESTER SUMMER ASSIZES.

Thursday, July 29, 1841.

Before Lord ABINGER and a Special Jury.

THE MASTER, WARDENS, AND SOCIETY OF APOTHECARIES v. WILLETT.

THIS was an action for the recovery of penalties alleged to have been incurred by the defendant, by having practised as an apothecary at Great Budworth, in Cheshire, without having obtained a certificate of his qualification to practise, as required by the 55th Geo. III., cap. 194.

Mr. JOHN JERVIS and Mr. E. V. WILLIAMS appeared for the plaintiffs. The defendant did not appear.

Mr. JERVIS stated the case to the jury. The defendant had practised three years at Great Budworth as an apothecary, without having given the proof which the law had required of his competency for such practice, and the society's remonstrances against his continuing to practise without legal qualification having been disregarded, they had been under the necessity of resorting to the present proceedings. The society's only object was to enforce the law, and publicly announce that unqualified persons would not be allowed to practise with impunity; they would, therefore, be satisfied with a verdict for a single penalty. The following witnesses were then called:—

Thomas Clarke stated, that he was a farmer, living at Seven Oaks, near Northwich; that he was taken ill in the middle of January last, and was attended by defendant for upwards of a month; his disease was the small-pox; he lost his eye from the disease; the defendant supplied him with medicine; the defendant sent in a bill, which was paid by the witness's father.

Herbert Thomas proved, that he was in the habit of fetching medicines from the defendant's house for the last witness during his illness.

The bill was then put in, which charged for journeys and medicine, and was receipted by the defendant.

Harriett Nixon, the wife of Abraham Nixon, stated, that she lived at Great Budworth; her husband was ill last spring; he had a cough; he was attended by the defendant for a week or more; the witness fetched physic for her husband from the defendant's house; the defendant said he had the typhus fever; the defendant had a ham of the witness; it weighed thirteen pounds,

and was to be ninepence a pound; the defendant had not paid for it; the witness will now ask him for it.

Sarah Johnson, the mother of the last witness, remembered her son-in-law being ill; he had a bad cough, and complained of his breathing; she went for the defendant; they owed him a small bill of 4s. 1d. for a former attendance; he hesitated about coming; he did not say whether he would come or not; they had got a ham in the house; the witness did not know what to do; she told the defendant he might have the ham to settle the bill; after the defendant had seen Abraham Nixon he told the witness he had the typhus fever; the witness once fetched medicine for Nixon from the defendant's house; it was pills.

Mr. JERVIS stated, that he was prepared to give evidence of several other cases if it were necessary.

Lord ABINGER summed up the case to the jury. It was an action brought by the Apothecaries' Company, for the purpose of preventing an uneducated person from practising as an apothecary; and it was of very great importance to the public health, that persons who were incapable, from a deficient education, of understanding the medicines they dispensed, should be prohibited from practising altogether. It having been found necessary to exclude from the practice of the profession all those who had not been properly educated for it, an Act was passed for that purpose in the reign of George the Third, by which it was enacted, that if any man should presume to practise as an apothecary, unless he had been before practising as such (for the law did not affect old practitioners), without having a certificate from Apothecaries' Hall, he should be liable to a penalty of 20*l*. There was no evidence here that the defendant was in practice at any time before the month of July, 1839, or a short time before. It did not appear that he had a certificate; he made no defence: and, therefore, it appeared to the learned judge that the jury might fairly conclude that he was not qualified to act as an apothecary.

The learned Judge, in commenting upon the evidence which had been given of the defendant's practice, observed to the jury, that the defendant had not practised without remuneration; he had done it for emolument; and that it appeared to him that if the jury saw no objection to the evidence, a sufficient case had been made out for a verdict for a single penalty.

The jury returned a verdict for the plaintiffs for one penalty.

The catalogue of authors who have written upon stone, occupies in Ploucquet's "Literatura Medica" no less than twenty-nine very closely printed quarto pages.—*Dr. Arnott's Essay.*

NAVAL MEDICAL SERVICE.

To the Editor of THE LANCET.

SIR:—I shall feel obliged by the insertion of the following few lines, in answer to a letter from Dr. Tweeddale, in last week's LANCET. I am, Sir, your obedient servant,

A NAVAL SURGEON OF THE OLD SCHOOL.

Although Dr. Tweeddale, by some extraordinary circumstance, deservedly, no doubt, but quite out of the usual routine of the service, may have served his noviciate in a ward-room, it does not by any means follow that such is the best introduction, either for his own interests or for that of others; it only tends the more to convince me that he is not an adequate judge of the subject he has so warmly espoused, having had little experience on the other side of the question. However, as he has produced nothing new in favour of his argument, or given anything beyond a simple negative to indisputable facts, I shall rest "on my oars" until I find something to answer. The evidence given by the inspector-general of the navy before the military and naval commission I was quite acquainted with before Dr. Tweeddale took up the cause; and, like every other part of Sir William Burnett's conduct, in striving to benefit, by every means in his power, all those whom he so worthily represents, it does him much honour. His wishes and views on the subject I interfered not with, because from him they were highly praiseworthy; but surely when Sir William Burnett failed in accomplishing an object, Dr. Tweeddale could scarcely hope to succeed! There the question ought to have been permitted to rest; and surely the agitation of it comes not well from one who confesses that he has little experience in the matter, inasmuch as by his own showing the whole of his servitude consists of seven or eight years, "principally in a ward-room." Dr. T. is also wide of the mark in designating those years as the most active period of the war. He must have forgotten that after the battle of Trafalgar, in 1805, neither France nor Spain had fleets of any magnitude with which to contend.

Dr. Tweeddale's assertion, that my remark relative to many medical students habitually smoking tobacco and drinking is "not founded on fact," can only be imputed to his want of knowledge on that subject: had he the same opportunities of testing that "fact" which I have had, his opinion would be different, unless he chose to shut his eyes against conviction. As Dr. Tweeddale seems also to mistake my reason for answering his letter anonymously I will explain it, and assure him I have no other. My sense of justice dictated that I should require to pay a tribute of well-merited praise to the laudable exertions of Sir William Burnett in

the general cause, and I did not choose that a just compliment to him should by possibility be construed into an attempt to seek personal favour.

July, 1841.

THE NAVAL MEDICAL SERVICE.

To the Editor of THE LANCET.

SIR:—In your remarks appended to my last letter, you terminate by asking, "How is it that our correspondent has so completely overlooked the old surgeons who served in the war?" to which I beg to answer, that nothing was further from my intention. I considered them as much robbed as those of a subsequent date; and I think, sir, that if you again read the paragraph commencing with "At first view, sir," you will perceive that I have stated their case as one also of great grievance. Since writing that letter, I have met with one extraordinary instance of the absurdity of the law in question, viz., that of a surgeon who was positively enjoying the increased full-pay some months before leaving his ship, and yet being obliged to invalid, is now in the same predicament as the rest of us. I have stated in a subsequent paragraph, that "I would strongly and earnestly advise young medical men to take any course of life rather than ours." Should you think my reasons worth the perusal of those (the junior members of the profession) who having completed their studies, are about to embark on that voyage, where the first false *course* often ends in shipwreck, I will in some future Number send you them. I have the honour to be, Sir, your obedient servant,

ONE OF THE ROBBED.

*** We shall be glad to see the "reasons" of our correspondent. We can assure him that we are most anxious to advance the interests of the naval medical service, but we are not satisfied with the list of complaints hitherto brought against it; we cannot acknowledge them to be hardships: and we could wish to see some suggestion emanating from the experienced which would point to a rational plan for their removal.

PRESERVATION OF LEECHES.

To the Editor of THE LANCET.

SIR:—If you think the following worthy of a place in your valuable Journal, I shall feel obliged by its insertion. I am, Sir, your obedient servant,

C. WATKINS.

11, Cork-street, July 21, 1841.

Owing to the mortality prevalent during the summer months among leeches, I have tried many plans to keep them healthy, but none have succeeded so well as a piece of charcoal put into the water, which keeps it perfectly clear and sweet for a week or more; and since I have employed it I have not lost any, though previously the mortality had been great.

*** We think that our correspondent would find an aquatic plant, such as the potamogeton, better calculated for preserving the purity of the water in which living animals are kept, than any other means. The charcoal must, in our opinion, be regarded only as a substitute for a growing plant.

DISLOCATION OF THE WRIST.

To the Editor of THE LANCET.

SIR:—Any controversy between myself and "E. S." would be attended with no good result. It is evident from his last communication that he thinks dislocation of the wrist *cannot* occur, therefore it would be useless in me to attempt to change his opinion:

> "For a man convinced against his will,
> Is of the same opinion still."

YOUR REPORTER.

*** The question of the occurrence of dislocation of the wrist, is one of very great importance, as far as the theory of surgery is concerned, and should not be dismissed summarily. As the discussion between our correspondents in the pages of this Journal at present stands, the evidence is unquestionably in favour of its non-occurrence. We say nothing of its possibility.

TO CORRESPONDENTS.

Mr. Stevens's communication has been received.

THE ADVERTISING YOUNG GENTLEMAN.

Several circulars with the signature X. O., similar to that published in our last, have been forwarded to us by our correspondents. Could any one favour us with the name of the respectable "Young Gentleman" who is the author of this production?

Communications have been received from *Dr. Hocken; Mr. Black; Mr. Dixon; Mr. Roods; Dr. Fletcher; Mr. Murray.*

We withhold the note of *An Anonymous Naval Assistant*, as its publication would be very injurious, not to the naval service as our correspondent would seem to desire, but to the medical officers of the navy.

Showing the No. of Deaths from all Causes, Registered in the 5 Weeks, ending Saturday, July 17, 1841.

Causes of Death.	June		July			Weekly Av. 1838-40, (corrected.)
	13 to 19	20 to 26	27 to J. 3	4 to 10	11 to 17	
Small-Pox	12	13	22	15	14	36
Measles	12	24	13	21	17	24
Scarlatina	16	14	16	18	8	38
Hooping-Cough	28	30	38	39	23	28
Croup	9	3	9	2	8	7
Thrush	5	9	1	10	5	5
Diarrhœa	6	3	2	6	9	8
Dysentery	1	....	1	4	1	2
Cholera	....	....	....	....	....	1
Influenza	....	2	....	1	1	1
Typhus	19	14	19	25	19	46
Erysipelas	1	2	1	2	4	7
Syphilis	1	....	1	....	1	1
Hydrophobia	....	....	....	....	....	.1
TOTAL	112	117	121	143	110	204
Cephalitis	14	15	13	18	9	11
Hydrocephalus	28	37	29	27	36	34
Apoplexy	24	21	12	14	20	18
Paralysis	12	10	13	14	9	15
Convulsions	52	29	47	30	77	60
Epilepsy	1	5	2	3	3	4
Insanity	1	1	1	....	....	1
Delirium Tremens	1	4	5	....	1	1
Dis. of Brain, &c.	6	11	7	6	13	7
TOTAL	139	143	131	132	168	151
Quinsey	3	4	....	....	1	1
Bronchitis	8	9	8	5	10	9
Pleurisy	....	1	2	1	3	2
Pneumonia	50	56	61	55	49	72
Hydrothorax	1	2	4	3	2	5
Asthma	15	12	7	10	9	24
Consumption	160	167	138	147	150	141
Dis. of Lungs, &c.	15	12	13	10	10	12
TOTAL	252	263	233	231	234	266
Pericarditis	....	....	1	....	....	.6
Aneurism	1	1	2	1	....	.6
Dis. of Heart, &c.	20	17	14	18	13	17
TOTAL	21	18	17	19	13	18
Teething	13	17	12	14	13	17
Gastri.—Enteritis	16	12	20	16	14	18
Peritonitis	1	1	....	1	....	2
Tabes Mesenterica	2	4	4	4	4	4
Ascites	....	....	1	....	1	1
Ulceration	2	1	1	....	1	1
Hernia	1	....	....	2	2	2
Colic or Ileus	2	2	1	....	2	1
Dis. of Stomach	7	8	9	4	3	4
Hepatitis	3	1	....	....	1	1
Jaundice	2	3	2	....	1	2
Dis. of Liver, &c.	12	5	10	9	5	7
TOTAL	60	54	60	50	47	60
Nephritis	....	1	....	....	1	.4
Diabetes	....	1	....	....	....	.3
Stone	....	....	....	....	....	.5
Stricture	....	....	....	1	....	.4
Dis. Kidneys, &c.	2	3	....	5	1	2.4
TOTAL	2	5	....	6	2	4

Causes of Death.	June		July			Weekly Av. 1838-40, (corrected.)
	13 to 19	20 to 26	27 to J. 3	4 to 10	11 to 17	
Childbed	3	6	3	4	4	7
Ovarian Dropsy	....	....	....	....	1	.2
Dis. of Uterus, &c.	4	1	3	2	1	2
TOTAL	7	7	6	6	6	9
Rheumatism	2	1	2	3	3	3
Dis. of Joints, &c.	1	1	2	2	....	3
TOTAL	3	2	4	5	3	6
Ulcer	....	....	1	....	....	.4
Fistula	....	....	1	....	....	.4
Dis. of Skin, &c.	1	....	....	....	1	.3
TOTAL	1	....	2	....	1	1
Inflammation	5	3	3	3	3	12
Hæmorrhage	5	3	2	....	4	3
Dropsy	25	28	30	26	30	34
Abscess	1	....	2	7	....	4
Mortification	8	7	1	6	2	5
Scrofula	2	5	2	....	4	2
Carcinoma	13	4	10	8	3	7
Tumour	1	2	1	2	4	2
Gout	....	....	2	1	2	1
Atrophy	1	4	7	3	9	4
Debility	17	11	19	16	18	15
Malformations	....	1	2	1	....	1
Sudden Deaths	11	7	13	16	15	13
TOTAL	89	75	94	89	96	103
Old Age	39	46	49	48	42	71
Intemperance	1	1	1	1	1	.6
Privation	....	....	1	....	2	.4
Violent Deaths	20	22	30	17	21	24
TOTAL	21	23	32	18	24	25
Causes not Spec.	4	2	2	8	13	8
Deaths, all Causes	750	755	751	755	761	926
No. of Week	24	25	26	27	28	....

1840—41.	Ages.		
	0 to 15	15 to 60	60 & upwards
June 13th to 19th	335	277	138
20th to 26th	364	262	127
27th to July 3rd	348	256	146
July 4th to 10th	367	249	139
11th to 17th	395	230	114
Weekly Average, 1838—40	438	314	171

TEMPERATURE		High.	Low.	D. Mean.
Week ending June 19		80°	47°	61°
,,	26	87	51	64
,, July	3	74	53	62
,,	10	80	52	65
,,	17	75	50	60

	Estimated Pop. 1840.	June 13 to 19.	June 20 to 26.	June 27 to July 3.	July 4 to 10.	July 11 to 17.	Weekly Av 1838-40
West Districts	308,921	108	107	128	99	124	139
North Districts	414,458	144	141	147	147	134	163
Central Districts	309,722	158	154	132	139	179	190
East Districts	411,634	163	163	148	174	143	211
South Districts	450,265	177	190	176	196	177	223
	1,955,000	750	755	731	755	761	926